Appendix – Section A

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Appendix A1.1

Reform Goals and Performance Measures

Race to the Top Goals and Performance Measures

Overall

- Increase statewide DC Comprehensive Assessment System (DC-CAS) performance by 5 percentage points per year;
- Close the minority achievement gap by 5 percentage points per year
- Close the poverty achievement gap by 3.5 percentage points per year over the next four years
- Increase National Assessment of Educational Progress (NAEP) scores by 10 points over four years, an improvement that will surpass the highest four-year student achievement gains made by any urban district in the 2009 Trial Urban District Assessment (TUDA) report
- Raise high school graduation rates by 3 percentage points per year
- Increase college enrollment by five percentage points per year and develop a baseline set of college-focused data from which DC will soon measure the college-readiness, college credit accumulation, and college completion rates of its students

Standards and Assessments

GOAL 1: Successfully transition to and implement common internationally benchmarked K-12 standards in English Language Arts and Mathematics through clear guidance to and regular communication with all relevant stakeholders (e.g., staff, parents, students, business community, higher education, etc.) and high-quality professional development for teachers and school staff

GOAL 2: Successfully transition to high-quality assessments, both interim and summative, aligned to these standards

PERFORMANCE MEASURE 1: *Prior to the rollout of the Common Core Standards in SY 2011-2012, every teacher/principal/administrator statewide (in both participating and non-participating LEAs) will be provided with professional development on implementing the Common Core Standards. These employees will also receive multiple PD opportunities during the SY 2011-2012.*

PERFORMANCE MEASURE 2: *By SY 2011-2012, 100% of participating LEAs will implement interim and revised summative assessments.*

PERFORMANCE MEASURE 3: *All participating LEAs will participate in the Common Core Standards Working Group.*

PERFORMANCE MEASURE 4: *By Fall 2012, the Special Education Data System (SEDS) will be aligned with the Common Core Standards.*

Data Systems

GOAL 1: Inform and engage key stakeholders (e.g., parents, students, teachers, principals, LEA leaders, community members, unions, researchers and policymakers) through an improved, interactive, user-friendly, online resource

GOAL 2: Provide data to decision-makers for the continuous improvement of reform efforts related to policy, instruction, operations, management, resource allocation, and overall effectiveness

GOAL 3: Develop instructional improvement systems aligned to data systems

GOAL 4: Provide professional development necessary to foster a data-driven culture within all schools

GOAL 5: Make data from instructional improvement systems and the statewide longitudinal data system available/accessible to researchers for the evaluation of effectiveness of various reform models, instructional materials, strategies, and approaches for educating different types of students

PERFORMANCE MEASURE 1: *By Fall 2011, OSSE will have revised its current website to allow users to view data through a choice of graphic displays and to view data at the school, LEA, and state level, in aggregate or by NCLB subgroup.*

PERFORMANCE MEASURE 2: *By Fall 2012, OSSE will have created a more user-friendly website from which users will be able to download aggregate-level data*

spreadsheets with statistics about students, teachers, and schools that are relevant to decision-making.

PERFORMANCE MEASURE 3: *By Fall 2012, 100% of participating LEAs will have developed instructional improvement systems according to application-defined criteria..*

PERFORMANCE MEASURE 4: *By Fall 2011, 100% of participating LEAs will have an in-school Data Coach or Analyst who devotes a significant portion of his/her time to fostering a school-level data-driven culture.*

PERFORMANCE MEASURE 5: *By Fall 2010, processes for external researchers to work with state-level data will be streamlined and efficient.*

Great Teachers and Leaders

Overarching Goal: By Spring 2014, teacher and principal effectiveness will have improved an average of 15% over baseline measures in participating LEAs.

GOAL 1: Develop a student growth measure for all LEAs with robust teacher and principal evaluations tied to this measure for use in informing human capital decisions

GOAL 2: Improve the proportion of effective and highly effective teachers in the schools in the highest quartile of schools in the State with respect to poverty level and in the hardest-to-staff subject areas

GOAL 3: Improve the quality of information available about teacher and principal preparation

GOAL 4: Increase the proportion of teachers and principals who are prepared through programs that equip them to be highly effective

GOAL 5: Create customized professional development experiences based on individual needs and leverage pockets of effectiveness within DC to improve overall educator effectiveness

PERFORMANCE MEASURE 1: *By Spring 2011, a common growth measure will be in place for all participating LEAs for grades 4-8.*

PERFORMANCE MEASURE 2: *By Fall 2011, 100% of participating LEAs will have robust systems for evaluating teachers and principals, using the growth measure where applicable, and using evaluations to inform human capital decisions.*

PERFORMANCE MEASURE 3: *By Summer 2014, the percentage of effective and highly effective teachers in the District's top quartile of schools in poverty will have increased 15% over the 2011 baseline.*

PERFORMANCE MEASURE 4*: By Summer 2014, the percentage of effective and highly effective teachers in identified hard-to-staff areas will have increased 15% over the 2011 baseline.*

PERFORMANCE MEASURE 5: *By Fall of 2014, aggregated information on effectiveness of graduates of teaching programs will be publicly available.*

PERFORMANCE MEASURE 6: *By Fall of 2016, any credentialing program with more than 25% of its second-year participants deemed "ineffective" (i.e., the lowest of four tiers) by LEAs may have their program approval subject to revocation by the State.*

Turning Around the Lowest-Achieving Schools

GOAL: Intervene with DC's persistently lowest-achieving schools through closure or another turnaround model that puts them on a trajectory for dramatically improved student achievement by creating conditions of support and attracting high-quality human capital to turnaround schools.

PERFORMANCE MEASURE 1: *By 2014, all schools that have undergone at least two years of a turnaround model will have demonstrated a rate of growth in student academic proficiency that exceeds the average statewide rate of growth by 1.5 to 2 times in year 2, and by 2 to 3 times in years 3 and 4.*

PERFORMANCE MEASURE 2: *By 2014, all the DCPS schools that have undergone at least 1 year of a turnaround model will be showing gains on leading indicators to be identified by the Office of School Innovation, such as attendance and credit recovery in secondary schools.*

STEM

GOAL 1: To prepare all students in DC to graduate high school with a college- and career-ready mastery of math, science, engineering and technology
GOAL 2: To increase the number of DC students who major in STEM fields in college and enter STEM careers

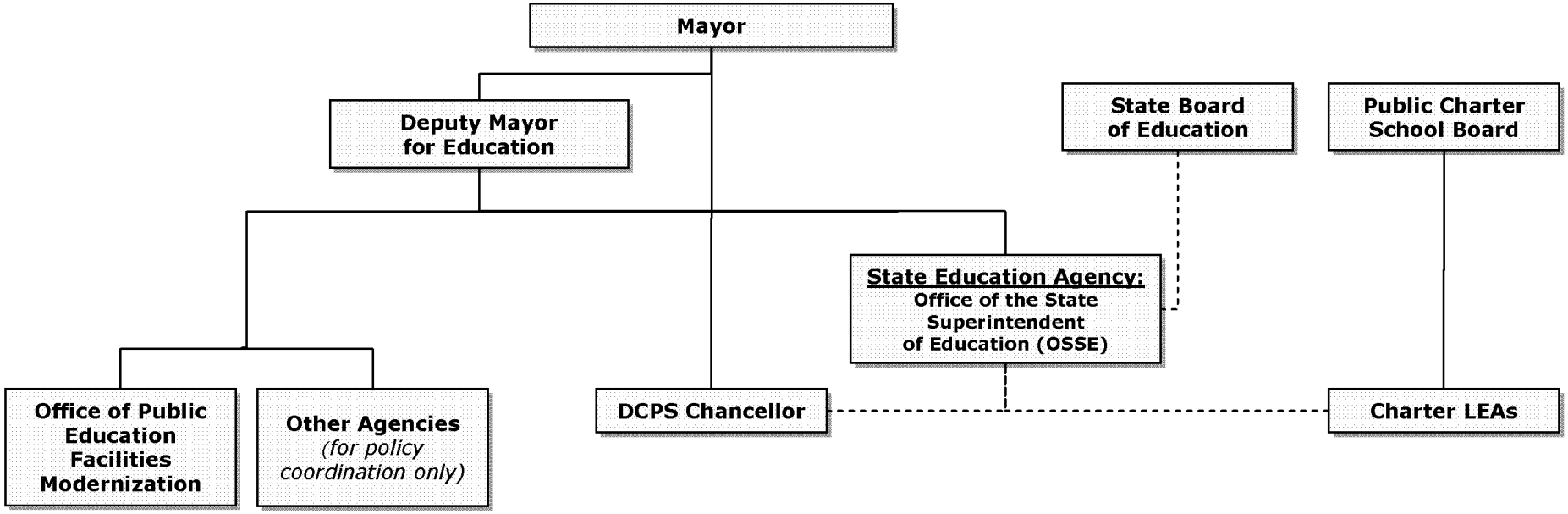
PERFORMANCE MEASURE 1: *By 2011, DC will have a coordinated statewide plan for STEM, developed by the DC STEM Learning Network, to include targets for the number of DC graduates choosing majors and careers in STEM-related fields.*

Appendix A1.2

Organizational Chart

District of Columbia Race to the Top

District of Columbia Education Governance Structure



Governance Roles and Responsibilities

Mayor
Mayor sets overall DC education agenda. Deputy Mayor for Education, DCPS Chancellor, and all agencies report to the Mayor. Appoints members to the PCSB.

Deputy Mayor for Education
Provide high-level leadership and support for an aligned and unified DC educational mission. Responsible for District-wide education strategy, oversight of the SEA (OSSE) and OPEFM, and interagency coordination.

State Board of Education
Responsible for advising the State Superintendent of Education on educational matters, including: state standards; state education policies (incl. for special, academic, vocational, charter and other schools); state objectives; and state regulations proposed by the Mayor or the State Superintendent of Education.

Public Charter School Board
An independent agency and the District's sole authorizer of charter schools, PCSB evaluates public charter schools for academic results, compliance with applicable local and federal laws and fiscal management, and holds schools accountable for results.

Office of the State Superintendent of Education (SEA)
Sets proactive policies, exercises vigilant oversight, and directs resources that guarantee residents educated in the District of Columbia are among the highest performers in the U.S.

DCPS / Chancellor
DC's only traditional public schools system, led by a Chancellor who reports to the Mayor.

Charter Schools
Independent and autonomous LEAs that report to the PCSB.

Appendix A1.3

Memorandum of Understanding - DCPS

District of Columbia Participating LEA Memorandum of Understanding

This Memorandum of Understanding ("MOU") is entered into by and between the Office of the State Superintendent of Education ("State") and _____ ("Participating LEA"). The purpose of this agreement is to establish a framework of collaboration, as well as articulate specific roles and responsibilities in support of the State in its implementation of an approved Race to the Top grant project.

I. SCOPE OF WORK

Exhibit I, the Preliminary Scope of Work, indicates which portions of the State's proposed reform plans ("State Plan") the Participating LEA is agreeing to implement. (Note that, in order to participate, the LEA must agree to implement all required elements of the State Reform Plan.)

II. PROJECT ADMINISTRATION

A. PARTICIPATING LEA RESPONSIBILITIES

In assisting the State in implementing the tasks and activities described in the State's Race to the Top application, the Participating LEA subgrantee will:

1) As a condition for participating in – and receiving an allocation of funds under – the State's Race to the Top program, enter into an agreement with the State that will describe more specifically the mutual responsibilities of the State and LEA for planning and implementing provisions of the State's plan. The agreement will be incorporated in or attached to the final scope of work, which must be provided to the state no later than 90 days after the Race to the Top ("RTTT") award to the OSSE and must be approved by the State.

The agreement will include a detailed work plan, prepared by the LEA and approved by the State, describing specific goals, activities, timelines, budgets, key personnel, and annual targets for key performance measures, and addressing how the LEA will use funds under other federal programs and from state and local sources to support the plan. The work plan must be consistent with the LEA's preliminary scope of work in this Memorandum of Understanding, with the approved State plan, and with further guidance that the State may provide. The State will approve the LEA for funding based on the scope and quality of the work plan, including the coherence of the LEA's reform agenda across the four education areas described in the law and the LEA's capacity to implement the plan and address at the local level significant elements of the State's approved plan in a meaningful and high quality way. The agreement between the State and the LEA will also detail the State's responsibilities for providing or coordinating technical assistance, professional development, and other support for the LEA in carrying out these functions, and how State and LEA activities will be sequenced.

2) Implement the LEA plan as identified in Exhibits I and II of this agreement;

3) Over the course of the project, work in good faith with the State to identify needs for modifications to the project and to make appropriate modifications in order to achieve the core goals of the project;

4) Post to any website specified by the State or the U.S. Department of Education, in a timely manner, all non-proprietary products and lessons learned that were developed using funds under the Race to the Top grant;

5) Participate, as requested, in any evaluations of this grant conducted by the State or the U.S. Department of Education;

6) Be responsive to State or ED requests for information on the status of the project, including project implementation, outcomes, and any problems anticipated or encountered;

7) Participate in meetings and telephone conferences with the State to discuss (a) progress of the project, (b) potential dissemination of resulting non-proprietary products and lessons learned, (c) plans for subsequent years of the Race to the Top grant period, and (d) other matters related to the Race to the Top grant and associated plans.

B. STATE RESPONSIBILITIES

In assisting Participating LEAs in implementing their tasks and activities described in the State's Race to the Top application, the State grantee will:

1) Work collaboratively with the Participating LEA in carrying out the LEA Plan as identified in Exhibit I and in the agreement to be developed under Section II-A-1 above;

2) Timely distribute the LEA's portion of Race to the Top grant funds during the course of the project period and in accordance with the LEA's approved work plan described in Section II-A-1 above;

3) Review the LEA's status updates, annual reports, any interim reports, and project plans and products; and

4) Provide or coordinate technical assistance, professional development, and support consistent with Section II-A-1 above.

C. JOINT RESPONSIBILITIES

1) The State and the Participating LEA will collaborate in good faith to ensure alignment and coordination of State and local planning and implementation activities in order to achieve effectively and efficiently the core goals of the State's plan, consistent with their respective roles under State law and policy.

2) The State and each Participating LEA will appoint a key contact person for the Race to the Top grant.

3) These key contacts from the State and the Participating LEA will maintain frequent communication to facilitate cooperation under this MOU.

4) Prior to receipt of grant awards, State and Participating LEA grant personnel will work together to determine appropriate timelines for project updates and status reports throughout the whole grant period.

5) State and Participating LEA grant personnel will negotiate in good faith to continue to achieve the overall goals of the State's Race to the Top grant, even when the State Plan requires modifications that affect the Participating LEA, or when the LEA Plan requires modifications.

D. STATE RECOURSE FOR LEA NON-PERFORMANCE

If the State reasonably determines that the LEA is not meeting its goals, timelines, budget, or annual targets or is not fulfilling other applicable requirements, after a reasonable opportunity for the LEA to cure the identified issues, the State will take appropriate enforcement action, which could include a collaborative process between the State and the LEA, or any of the enforcement measures that are detailed in 34 CFR section 80.43 including, for example, putting the LEA on reimbursement payment status, temporarily withholding funds, or disallowing costs.

III. ASSURANCES

The Participating LEA hereby certifies and represents that it:

1) Has all requisite power and authority to execute this MOU;

2) Has reviewed the State's Race to the Top grant application and will implement all required elements of the State Reform Plan, as defined by the State, and consistent with Exhibit I;

3) Will provide a Final Scope of Work and detailed work plans consistent with Section II-A-1 above if the State's application is funded; will do so in a timely manner but no later than 90 days after a grant is awarded; and will enter into an agreement with the State consistent with Section II-A-1 above; and

4) Will comply with all of the terms of the Grant, the State's subgrant, and all applicable Federal and State laws and regulations, including laws and regulations applicable to the Program, and the applicable provisions of EDGAR (34 CFR Parts 75, 77, 79, 80, 82, 84, 85, 86, 97, 98 and 99).

IV. MODIFICATIONS

This Memorandum of Understanding may be amended only by written agreement signed by each of the parties involved, and in consultation with the U.S. Department of Education.

V. DURATION/TERMINATION

This Memorandum of Understanding shall be effective, beginning with the date of the last signature hereon and, if a grant is received, ending upon the expiration of the grant project period, or upon mutual agreement of the parties, whichever occurs first.

VI. SIGNATURES

LEA Superintendent – required**:**

_____

Signature/Date

_____

Print Name/Title

Local Teachers' Union Leader (if applicable)**:**

_____

Signature/Date

_____

Print Name/Title

Authorized State Official – required**:**
By its signature below, the State hereby accepts the LEA as a Participating LEA.

_____
Signature/Date

_____
Print Name/Title

EXHIBIT I – PRELIMINARY SCOPE OF WORK

Consistent with federal requirements and criteria, the State's plan addresses education reforms in each of the areas of standards and assessments; data systems and fuller use of data; great teachers and leaders; and supports for the persistently lowest achieving schools. The plan articulates State policies and goals in each of these areas and an overall strategy for accomplishing and monitoring the goals. Many of the goals relate to what happens in school districts, schools, and classrooms. The goals can only be accomplished if local educational agencies work in coordination with the State educational agency to plan and implement reforms at the local level in ways that are aligned with the State plan.

In signing this MOU, the local educational agency signifies its intent to be bound to the State plan, to collaborate with the State in modifying state and local plans over the course of the project as appropriate to achieve core goals, and to act in good faith in implementing the State plan in each of the following areas. If the State receives a grant, allocation of funds to the local educational agency will be contingent on the development of a detailed local work plan and a State-LEA agreement that will spell out local and State responsibilities in these areas in greater detail.

Elements of State Reform Plans	**LEA Participation (Y/N)**	**Comments from LEA (optional)**
B. Standards and Assessments – The LEA will participate in implementing appropriate aspects of the State Plan to develop and implement high-quality standards and assessment systems, including but not limited to:		
(1) Create a plan for aligning curriculum with common standards and assessments (B3)	REQUIRED	
(2) Implement interim assessments in 3rd through 10th grades that meet OSSE-specified criteria and are aligned to common standards (B3)	REQUIRED	
(3) Provide in-school training and professional development on common standards alignment (B3)	REQUIRED	
(4) Organize school community meetings to explain common standards and assessments (B3)	REQUIRED	
C. Data Systems to Support Instruction – The LEA will participate in implementing all aspects of the State Plan to develop, implement, and use a statewide longitudinal data system, including but not limited to:		
(1) Support the state in fully implementing a statewide longitudinal data system by providing data to OSSE as needed (C1)	REQUIRED	

Elements of State Reform Plans	LEA Participation (Y/N)	Comments from LEA (optional)
(2) Develop a local instructional improvement system to collect, analyze, and use data to improve instruction (C2)	REQUIRED	
(3) Use data to improve instruction (C3):		
(i) Use of local instructional improvement systems (C3(i))	REQUIRED	
(ii) Professional development on use of data to improve instruction (C3(ii))	REQUIRED	
(iii) Availability and accessibility of data to researchers (C3(iii))	REQUIRED	
(4) Provide teachers with regularly scheduled planning time for using data from interim assessments to inform instruction (C3)	REQUIRED	
D. Great Teachers and Leaders – The LEA will participate in implementing all aspects of the State Plan to develop and implement systems to enhance teacher and leader effectiveness, including but not limited to:		
(1) Partner with high-quality pathways for aspiring teachers and principals (D1)	REQUIRED	
(2) Improve teacher and principal effectiveness based on performance (D2):		
(i) Measure student growth with common growth measure developed by a Student Growth Task Force, comprised of representatives of OSSE, PCSB, and LEAs, and approved by OSSE (D2(i))	REQUIRED	
(ii) Design and implement evaluation systems that meet OSSE-defined criteria, including 50% tied to student growth (D2(ii))*	REQUIRED	
(iii) Conduct annual evaluations (D2(iii))	REQUIRED	
(iv)(a) Use evaluations to support individualized professional development (D2(iii))	REQUIRED	
(iv)(b) Use evaluations to inform compensation, promotion, and retention (D2(iv))	REQUIRED	
(iv)(c) Use evaluations to inform tenure and/or	REQUIRED	

Elements of State Reform Plans	LEA Participation (Y/N)	Comments from LEA (optional)
full certification (D2(iv))	AS APPLICABLE	
(iv)(d) Use evaluations to inform removal (D2(iv))	REQUIRED	
(3) Analyze and develop a plan to improve equitable distribution of effective teachers and principals at (D3):		
(i) High-poverty and/or high-minority schools	REQUIRED AS APPLICABLE	
(ii) Hard-to-staff subjects and specialty areas	REQUIRED AS APPLICABLE	
(4) Provide effective support to teachers and principals (D5):		
(i) Quality professional development (D5(i))	REQUIRED	
(ii) Measure effectiveness of professional development (D5(ii))	REQUIRED	
(5) Report teacher effectiveness to OSSE (D2,3,5)*	REQUIRED	
E. Turning Around the Lowest-Achieving Schools – The LEA will participate in implementing all aspects of the State Plan to intervene and turn around the lowest-achieving schools, including but not limited to:		
(E)(1) Agree to implement one of four approved turnaround models for schools that match the OSSE definition of lowest-achieving schools (E2(ii))	REQUIRED AS APPLICABLE	

*Student growth will be measured using the DC CAS for 3rd through 8th grades. In 2012, the Student Growth Task Force will identify additional assessments that can be used for human capital decisions.

For the Participating LEA

For the State

Authorized LEA Signature/Date

Authorized State Signature/Date

Print Name/Title

Print Name/Title

Appendix A1.4

Memorandum of Understanding – Charter LEAs

District of Columbia Participating LEA Memorandum of Understanding

This Memorandum of Understanding ("MOU") is entered into by and between the Office of the State Superintendent of Education ("State") and _____ ("Participating LEA"). The purpose of this agreement is to establish a framework of collaboration, as well as articulate specific roles and responsibilities in support of the State in its implementation of an approved Race to the Top grant project.

I. SCOPE OF WORK

Exhibit I, the Preliminary Scope of Work, indicates which portions of the State's proposed reform plans ("State Plan") the Participating LEA is agreeing to implement. (Note that, in order to participate, the LEA must agree to implement all required elements of the State Reform Plan.)

II. PROJECT ADMINISTRATION

A. PARTICIPATING LEA RESPONSIBILITIES

In assisting the State in implementing the tasks and activities described in the State's Race to the Top application, the Participating LEA subgrantee will:

1) As a condition for participating in – and receiving an allocation of funds under – the State's Race to the Top program, enter into an agreement with the State that will describe more specifically the mutual responsibilities of the State and LEA for planning and implementing provisions of the State's plan. The agreement will be incorporated in or attached to the final scope of work, which must be provided to the state no later than 90 days after the Race to the Top ("RTTT") award to the OSSE and must be approved by the State.

The agreement will include a detailed work plan, prepared by the LEA and approved by the State, describing specific goals, activities, timelines, budgets, key personnel, and annual targets for key performance measures, and addressing how the LEA will use funds under other federal programs and from state and local sources to support the plan. The work plan must be consistent with the LEA's preliminary scope of work in this Memorandum of Understanding, with the approved State plan, and with further guidance that the State may provide. The State will approve the LEA for funding based on the scope and quality of the work plan, including the coherence of the LEA's reform agenda across the four education areas described in the law and the LEA's capacity to implement the plan and address at the local level significant elements of the State's approved plan in a meaningful and high quality way. The agreement between the State and the LEA will also detail the State's responsibilities for providing or coordinating technical assistance, professional development, and other support for the LEA in carrying out these functions, and how State and LEA activities will be sequenced.

2) Implement the LEA plan as identified in Exhibits I and II of this agreement;

3) Over the course of the project, work in good faith with the State to identify needs for modifications to the project and to make appropriate modifications in order to achieve the core goals of the project;

4) Post to any website specified by the State or the U.S. Department of Education, in a timely manner, all non-proprietary products and lessons learned that were developed using funds under the Race to the Top grant;

5) Participate, as requested, in any evaluations of this grant conducted by the State or the U.S. Department of Education;

6) Be responsive to State or ED requests for information on the status of the project, including project implementation, outcomes, and any problems anticipated or encountered;

7) Participate in meetings and telephone conferences with the State to discuss (a) progress of the project, (b) potential dissemination of resulting non-proprietary products and lessons learned, (c) plans for subsequent years of the Race to the Top grant period, and (d) other matters related to the Race to the Top grant and associated plans.

B. STATE RESPONSIBILITIES

In assisting Participating LEAs in implementing their tasks and activities described in the State's Race to the Top application, the State grantee will:

1) Work collaboratively with the Participating LEA in carrying out the LEA Plan as identified in Exhibit I and in the agreement to be developed under Section II-A-1 above;

2) Timely distribute the LEA's portion of Race to the Top grant funds during the course of the project period and in accordance with the LEA's approved work plan described in Section II-A-1 above;

3) Review the LEA's status updates, annual reports, any interim reports, and project plans and products; and

4) Provide or coordinate technical assistance, professional development, and support consistent with Section II-A-1 above.

C. JOINT RESPONSIBILITIES

1) The State and the Participating LEA will collaborate in good faith to ensure alignment and coordination of State and local planning and implementation activities in order to achieve effectively and efficiently the core goals of the State's plan, consistent with their respective roles under State law and policy.

2) The State and each Participating LEA will appoint a key contact person for the Race to the Top grant.

3) These key contacts from the State and the Participating LEA will maintain frequent communication to facilitate cooperation under this MOU.

4) Prior to receipt of grant awards, State and Participating LEA grant personnel will work together to determine appropriate timelines for project updates and status reports throughout the whole grant period.

5) State and Participating LEA grant personnel will negotiate in good faith to continue to achieve the overall goals of the State's Race to the Top grant, even when the State Plan requires modifications that affect the Participating LEA, or when the LEA Plan requires modifications.

D. STATE RECOURSE FOR LEA NON-PERFORMANCE

If the State reasonably determines that the LEA is not meeting its goals, timelines, budget, or annual targets or is not fulfilling other applicable requirements, after a reasonable opportunity for the LEA to cure the identified issues, the State will take appropriate enforcement action, which could include a collaborative process between the State and the LEA, or any of the enforcement measures that are detailed in 34 CFR section 80.43 including, for example, putting the LEA on reimbursement payment status, temporarily withholding funds, or disallowing costs.

III. ASSURANCES

The Participating LEA hereby certifies and represents that it:

1) Has all requisite power and authority to execute this MOU;

2) Has reviewed the State's Race to the Top grant application and will implement all required elements of the State Reform Plan, as defined by the State, and consistent with Exhibit I;

3) Will provide a Final Scope of Work and detailed work plans consistent with Section II-A-1 above if the State's application is funded; will do so in a timely manner but no later than 90 days after a grant is awarded; and will enter into an agreement with the State consistent with Section II-A-1 above; and

4) Will comply with all of the terms of the Grant, the State's subgrant, and all applicable Federal and State laws and regulations, including laws and regulations applicable to the Program, and the applicable provisions of EDGAR (34 CFR Parts 75, 77, 79, 80, 82, 84, 85, 86, 97, 98 and 99).

IV. MODIFICATIONS

This Memorandum of Understanding may be amended only by written agreement signed by each of the parties involved, and in consultation with the U.S. Department of Education.

V. DURATION/TERMINATION

This Memorandum of Understanding shall be effective, beginning with the date of the last signature hereon and, if a grant is received, ending upon the expiration of the grant project period, or upon mutual agreement of the parties, whichever occurs first.

VI. SIGNATURES

LEA Superintendent – required**:**

_____

Signature/Date

_____

Print Name/Title

President of Board of Trustees:

_____

Signature/Date

_____

Print Name/Title

Authorized State Official – required**:**
By its signature below, the State hereby accepts the LEA as a Participating LEA.

_____
Signature/Date

_____
Print Name/Title

EXHIBIT I – PRELIMINARY SCOPE OF WORK

Consistent with federal requirements and criteria, the State's plan addresses education reforms in each of the areas of standards and assessments; data systems and fuller use of data; great teachers and leaders; and supports for the persistently lowest achieving schools. The plan articulates State policies and goals in each of these areas and an overall strategy for accomplishing and monitoring the goals. Many of the goals relate to what happens in school districts, schools, and classrooms. The goals can only be accomplished if local educational agencies work in coordination with the State educational agency to plan and implement reforms at the local level in ways that are aligned with the State plan.

In signing this MOU, the local educational agency signifies its intent to be bound to the State plan, to collaborate with the State in modifying state and local plans over the course of the project as appropriate to achieve core goals, and to act in good faith in implementing the State plan in each of the following areas. If the State receives a grant, allocation of funds to the local educational agency will be contingent on the development of a detailed local work plan and a State-LEA agreement that will spell out local and State responsibilities in these areas in greater detail.

Elements of State Reform Plans	**LEA Participation (Y/N)**	**Comments from LEA (optional)**
B. Standards and Assessments – The LEA will participate in implementing appropriate aspects of the State Plan to develop and implement high-quality standards and assessment systems, including but not limited to:		
(1) Create a plan for aligning curriculum with common standards and assessments (B3)	REQUIRED	
(2) Implement interim assessments in 3rd through 10th grades that meet OSSE-specified criteria and are aligned to common standards (B3)	REQUIRED	
(3) Provide in-school training and professional development on common standards alignment (B3)	REQUIRED	
(4) Organize school community meetings to explain common standards and assessments (B3)	REQUIRED	
C. Data Systems to Support Instruction – The LEA will participate in implementing all aspects of the State Plan to develop, implement, and use a statewide longitudinal data system, including but not limited to:		
(1) Support the state in fully implementing a statewide longitudinal data system by providing data to OSSE as needed (C1)	REQUIRED	

Elements of State Reform Plans	LEA Participation (Y/N)	Comments from LEA (optional)
(2) Develop a local instructional improvement system to collect, analyze, and use data to improve instruction (C2)	REQUIRED	
(3) Use data to improve instruction (C3):		
(i) Use of local instructional improvement systems (C3(i))	REQUIRED	
(ii) Professional development on use of data to improve instruction (C3(ii))	REQUIRED	
(iii) Availability and accessibility of data to researchers (C3(iii))	REQUIRED	
(4) Provide teachers with regularly scheduled planning time for using data from interim assessments to inform instruction (C3)	REQUIRED	
D. Great Teachers and Leaders – The LEA will participate in implementing all aspects of the State Plan to develop and implement systems to enhance teacher and leader effectiveness, including but not limited to:		
(1) Partner with high-quality pathways for aspiring teachers and principals (D1)	REQUIRED	
(2) Improve teacher and principal effectiveness based on performance (D2):		
(i) Measure student growth with common growth measure developed by a Student Growth Task Force, comprised of representatives of OSSE, PCSB, and LEAs, and approved by OSSE (D2(i))	REQUIRED	
(ii) Design and implement evaluation systems that meet OSSE-defined criteria, including 50% tied to student growth (D2(ii))*	REQUIRED	
(iii) Conduct annual evaluations (D2(iii))	REQUIRED	
(iv)(a) Use evaluations to support individualized professional development (D2(iii))	REQUIRED	
(iv)(b) Use evaluations to inform compensation, promotion, and retention (D2(iv))	REQUIRED	
(iv)(c) Use evaluations to inform tenure and/or	REQUIRED	

Elements of State Reform Plans	LEA Participation (Y/N)	Comments from LEA (optional)
full certification (D2(iv))	AS APPLICABLE	
(iv)(d) Use evaluations to inform removal (D2(iv))	REQUIRED	
(3) Analyze and develop a plan to improve equitable distribution of effective teachers and principals at (D3):		
(i) High-poverty and/or high-minority schools	REQUIRED AS APPLICABLE	
(ii) Hard-to-staff subjects and specialty areas	REQUIRED AS APPLICABLE	
(4) Provide effective support to teachers and principals (D5):		
(i) Quality professional development (D5(i))	REQUIRED	
(ii) Measure effectiveness of professional development (D5(ii))	REQUIRED	
(5) Report teacher effectiveness to OSSE (D2,3,5)*	REQUIRED	
E. Turning Around the Lowest-Achieving Schools – The LEA will participate in implementing all aspects of the State Plan to intervene and turn around the lowest-achieving schools, including but not limited to:		
(E)(1) Agree to implement one of four approved turnaround models for schools that match the OSSE definition of lowest-achieving schools (E2(ii))	REQUIRED AS APPLICABLE	

*Student growth will be measured using the DC CAS for 3rd through 8th grades. In 2012, the Student Growth Task Force will identify additional assessments that can be used for human capital decisions.

For the Participating LEA

For the State

Authorized LEA Signature/Date

Authorized State Signature/Date

Print Name/Title

Print Name/Title

Appendix A1.5

LEA Participation Detail

Detailed Table for (A)(1)

This table provides detailed information on the participation of each participating LEA (as defined in this notice). States should use this table to complete the Summary Tables above. (Note: If the State has a large number of participating LEAs (as defined in this notice), it may move this table to an appendix. States should provide in their narrative a clear reference to the appendix that contains the table.)

	LEA Demographics			Signatures on MOUs			MOU Terms	Preliminary Scope of Work – Participation in each applicable Plan Criterion															
Participating LEAs	# of Schools	# of K-12 Students	# of K-12 Students in Poverty	LEA Supt. (or equivalent)	President of local school board (if applicable)	President of Local Teachers Union (if applicable)	Uses Standard Terms & Conditions?	(B)(3)	(C)(3)(i)	(C)(3)(ii)	(C)(3) (iii)	(D)(2) (i)	(D)(2) (ii)	(D)(2) (iii)	(D)(2)(iv)(a)	(D)(2)(iv)(b)	(D)(2)(iv)(c)	(D)(2) (iv)(d)	(D)(3)(i)	(D)(3)(ii)	(D)(5)(i)	(D)(5)(ii)	(E)(2)
Name of LEA here				Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Yes/ No	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA	Y/ N/ NA
1. District of Columbia Public Schools	128	44,467	32,161	Y	NA	N	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2. Achievement Preparatory Academy	1	99	85	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3. Apple Tree PCS	3	180	129	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4. The Arts and Technology Academy	1	606	526	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5. Bridges PCS	1	85	43	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
6. Capital City PCS	2	425	219	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
7. Center City PCS	6	1,207	880	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
8. Cesar Chavez PCS	3	1,383	921	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
9. Community Academy PCS	7	1,579	1,068	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
10. DC Bilingual PCS	1	349	198	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
11. DC Preparatory Academy	3	850	696	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
12. Early Childhood PCS	1	225	149	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
13. E.L. Haynes PCS	1	460	285	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
14. Elsie Whitlow Stokes PCS	1	326	276	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
15. Excel Academy PCS	1	209	172	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
16. Friendship PCS	6	3,660	2,780	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
17. Hope Community PCS	2	658	404	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
18. Hospitality PCS	1	174	166	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

19. Howard Road Academy	4	933	777	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
20. Hyde Leadership PCS	1	741	652	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
21. IDEA PCS	1	468	405	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
22. Ideal Academy	2	385	101	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
23. Imagine Southeast PCS	1	318	201	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
24. KIPP DC	7	1,586	1,254	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
25. Maya Angelou PCS	3	552	329	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
26. Meridian PCS	1	515	1	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
27. National Collegiate Preparatory	1	82	82	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
28. Options PCS	2	318	292	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
29. Paul PCS	1	666	468	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
30. Potomac Lighthouse PCS	1	269	221	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
31. SAIL PCS	1	166	126	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
32. Septima Clark PCS	1	133	110	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
33. Thurgood Marshall Academy	1	389	245	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
34. Tree of Life Community PCS	1	266	247	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
35. William E Doar Jr. PCS	3	643	482	Y	Y	NA	Yes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Appendix A1.6

Tables & Graphs of State Goals

A1(iii)(a) – ESEA Goals by Subject and School Level

STATEWIDE ESEA ASSESSMENT GOALS by School Level – Percent of Students Scoring Proficient or Advanced (2009 – 2013)						
	2009	**2010**	**2011**	**2012**	**2013**	**Percentage Point Proficiency Gain ('09 – '13)**
Elementary Reading	47.80%	**53.46%**	**59.12%**	**64.78%**	**70.44%**	**22.6**
Elementary Math	46.10%	**51.76%**	**57.42%**	**63.08%**	**68.74%**	**22.6**
Secondary Reading	45.40%	**51.06%**	**56.72%**	**62.38%**	**68.04%**	**22.6**
Secondary Math	46.40%	**52.06%**	**57.72%**	**63.38%**	**69.04%**	**22.6**

* Goals are displayed in bold lettering
Source: OSSE: www.nclb.osse.dc.gov

A1(iii)(a) – ESEA Goals by Subgroup

ESEA GOALS by Subgroup – READING – Percent of Students Scoring Proficient or Advanced (2009 – 2013)						
	2009	**2010**	**2011**	**2012**	**2013**	**Percentage Point Proficiency Gain ('09 –'13)**
Race/Ethnicity						
Asian/Pacific Islanders	74.1%	**75.6%**	**77.1%**	**78.6%**	**80.1%**	**6.0**
Black/Non-Hispanic	41.8%	**47.8%**	**53.8%**	**59.8%**	**65.8%**	**24.0**
Hispanic	48.7%	**54.7%**	**60.7%**	**66.7%**	**72.7%**	**24.0**
White/Non-Hispanic	87.6%	**88.6%**	**89.6%**	**90.6%**	**91.6%**	**4.0**
Gender						
Female	50.7%	**55.4%**	**60.0%**	**64.7%**	**69.3%**	**18.6**
Male	39.9%	**46.6%**	**53.3%**	**59.9%**	**66.6%**	**26.7**
SPED						
Disabled	18.4%	**24.7%**	**31.2%**	**37.7%**	**44.1%**	**25.8**
Non-disabled	51.4%	**56.8%**	**62.3%**	**67.8%**	**73.3%**	**21.9**
English Proficiency						
LEP/NEP	44.7%	**50.3%**	**56.0%**	**61.7%**	**67.3%**	**22.6**
Non-LEP/NEP	45.4%	**51.0%**	**56.7%**	**62.4%**	**68.0%**	**22.6**
Econ. Status						
Econ. Disadvantaged	39.9%	**46.8%**	**53.6%**	**60.5%**	**67.4%**	**27.5**
Non-Econ. Disadvantaged	57.8%	**60.7%**	**63.6%**	**66.4%**	**69.3%**	**11.5**
STATE Total:	**45.3%**	**51.0%**	**56.6%**	**62.3%**	**68.0%**	**22.6**

* Goals are displayed in bold lettering
Source: OSSE: www.nclb.osse.dc.gov

A1(iii)(a) – ESEA Goals by Subgroup

ESEA GOALS by Subgroup – MATH – Percent of Students Scoring Proficient or Advanced (2009 – 2013)						
	2009	**2010**	**2011**	**2012**	**2013**	**Percentage Point Proficiency Gain ('09 –'13)**
Race/Ethnicity						
Asian/Pacific Islanders	86.5%	**87.5%**	**88.5%**	**89.5%**	**90.5%**	**4.0**
Black/Non-Hispanic	40.5%	**46.4%**	**52.4%**	**58.4%**	**64.4%**	**24.0**
Hispanic	53.4%	**59.4%**	**65.4%**	**71.4%**	**77.4%**	**24.0**
White/Non-Hispanic	86.0%	**87.0%**	**88.0%**	**89.0%**	**90.0%**	**4.0**
Gender						
Female	46.9%	**53.3%**	**58.2%**	**63.1%**	**68.0%**	**21.1**
Male	42.6%	**47.5%**	**53.9%**	**60.3%**	**66.7%**	**24.2**
SPED						
Disabled	16.9%	**23.2%**	**29.7%**	**36.2%**	**42.7%**	**25.7**
Non-disabled	51.0%	**56.5%**	**61.9%**	**67.4%**	**72.9%**	**21.9**
English Proficiency						
LEP/NEP	53.0%	**55.8%**	**60.0%**	**64.1%**	**68.3%**	**15.3**
Non-LEP/NEP	43.9%	**49.8%**	**55.6%**	**61.4%**	**67.3%**	**23.4**
Econ. Status						
Econ. Disadvantaged	40.1%	**46.8%**	**53.5%**	**60.2%**	**66.9%**	**26.9**
Non-Econ. Disadvantaged	55.6%	**58.8%**	**62.0%**	**65.2%**	**68.4%**	**12.9**
STATE Total:	**44.8%**	**50.4%**	**56.1%**	**61.7%**	**67.4%**	**22.6**

* Goals are displayed in bold lettering
Source: OSSE: www.nclb.osse.dc.gov

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A1(iii)(a) – NAEP Goals by Subgroup

NAEP SCORE GOALS – 4th Grade Reading (2007 – 2013)						
	2007	**2009**	**2011**	**2013**	**4 Year Gain**	**6 Year Gain**
All students	197	202	**208**	**213**	**11**	**16**
Male	194	198	**205**	**212**	**11**	**18**
Female	200	206	**210**	**214**	**10**	**14**
White	258	256	**262**	**267**	**4**	**9**
Black	192	196	**203**	**209**	**12**	**17**
Hispanic	206	207	**214**	**221**	**8**	**15**
SPED	162	165	**172**	**179**	**12**	**27**
Not SPED	199	204	**209**	**214**	**10**	**15**
FRL	188	193	**202**	**207**	**12**	**19**
Not FRL	216	226	**226**	**226**	**10**	**10**
ELL	198	194	**204**	**213**	**6**	**15**
Not ELL	197	202	**208**	**213**	**11**	**16**

* Goals are displayed in bold lettering
Source: National Assessment of Educational Progress: http://nces.ed/gov/nationsreportcard/naepdata/

A1(iii)(a) – NAEP Goals by Subgroup

NAEP SCORE GOALS – 8th Grade Reading (2007 – 2013)						
	2007	**2009**	**2011**	**2013**	**4 Year Gain**	**6 Year Gain**
All students	241	242	**246**	**252**	**5**	**11**
Male	235	236	**242**	**251**	**7**	**16**
Female	245	248	**250**	**253**	**6**	**8**
White**	**302**	**303**	**304**	**305**	**2**	**3**
Black	238	239	**244**	**250**	**6**	**12**
Hispanic	249	249	**252**	**257**	**3**	**8**
SPED	210	205	**216**	**227**	**6**	**17**
Not SPED	243	245	**249**	**253**	**6**	**10**
FRL	234	237	**242**	**248**	**8**	**14**
Not FRL	253	256	**258**	**261**	**5**	**8**
ELL**	**235**	**240**	**246**	**251**	**11**	**16**
Not ELL	241	243	**248**	**252**	**8**	**11**

** Data not available for 2007 and 2009 due to inadequate sample size. Numbers estimated based on historical 2003 and 2005 figures.
Source: National Assessment of Educational Progress: http://nces.ed/gov/nationsreportcard/naepdata/

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A1(iii)(a) – NAEP Goals by Subgroup

NAEP SCORE GOALS – 4th Grade Math (2007 – 2013)						
	2007	**2009**	**2011**	**2013**	**4 Year Gain**	**6 Year Gain**
All students	214	219	**224**	**229**	**10**	**15**
Male	213	218	**223**	**229**	**11**	**16**
Female	214	221	**225**	**229**	**8**	**15**
White	262	270	**272**	**274**	**4**	**12**
Black	209	213	**221**	**225**	**12**	**16**
Hispanic	220	227	**230**	**235**	**8**	**15**
SPED	188	193	**199**	**208**	**15**	**20**
Not SPED	216	222	**227**	**230**	**8**	**14**
FRL	207	211	**216**	**222**	**11**	**15**
Not FRL	228	242	**243**	**248**	**6**	**20**
ELL	209	215	**220**	**226**	**11**	**17**
Not ELL	214	220	**224**	**229**	**9**	**15**

Source: National Assessment of Educational Progress: http://nces.ed/gov/nationsreportcard/naepdata/

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A1(iii)(a) – NAEP Goals by Subgroup

NAEP SCORE GOALS – 8th Grade Math (2007 – 2013)						
	2007	2009	2011	2013	4 Year Gain	6 Year Gain
All students	248	254	**259**	**265**	**11**	**17**
Male	248	252	**258**	**264**	**12**	**16**
Female	248	255	**260**	**265**	**10**	**17**
White	**319***	**321***	**323**	**325**	**4**	**6**
Black	245	249	**254**	**261**	**12**	**16**
Hispanic	251	265	**268**	**274**	**9**	**23**
SPED	211	213	**220**	**228**	**15**	**17**
Not SPED	252	259	**263**	**269**	**10**	**17**
FRL	243	247	**252**	**259**	**12**	**16**
Not FRL	259	272	**275**	**279**	**7**	**20**
ELL	226	**230***	**237**	**245**	**15**	**19**
Not ELL	249	254	**259**	**265**	**11**	**16**

* Scores for white students in 2007 and 2009 and ELLs in 2009 were not available due to inadequate sample size. 2007 and 2009 figures are estimated using historical scores.
Source: National Assessment of Educational Progress: http://nces.ed/gov/nationsreportcard/naepdata/

A1(iii)(b) – ESEA Goals – Achievement Gap

ESEA Absolute Achievement Gap Goals - Reading - Percent of Students Scoring Proficient or Advanced (2009-2013)						
	2009	**2010**	**2011**	**2012**	**2013**	**Percentage Point Decrease in Gap ('09-'13)**
Race/Ethnicity - Calculated as the amount a given ethnicity is below proficiency of (White/Non-Hispanic)						
Asian/Pacific Islanders	13.5%	**13.0%**	**12.5%**	**12.0%**	**11.5%**	**2.0**
Black/Non-Hispanic	45.8%	**40.8%**	**35.8%**	**30.8%**	**25.8%**	**20.0**
Hispanic	38.9%	**33.8%**	**28.8%**	**23.8%**	**18.8%**	**20.0**
Gender - Calculated as (proficiency for females - proficiency for males)						
Female – Male	10.8%	**8.8%**	**6.8%**	**4.8%**	**2.8%**	**8.0**
SPED - Calculated as (proficiency for non-disabled students - proficiency for special needs students)						
Non-disabled – SPED	33.0%	**32.1%**	**31.1%**	**30.1%**	**29.1%**	**3.8**
English Proficiency - Calculated as (proficiency for non-LEP/NEP - proficiency for LEP/NEP)						
Non-LEP/NEP - LEP/NEP	0.7%	**0.7%**	**0.7%**	**0.7%**	**0.7%**	**0.0**
Econ. Status - Calculated as (proficiency for non-disadvantaged - proficiency for disadvantaged)						
Econ. Disadvantaged	17.9%	**13.9%**	**9.9%**	**5.9%**	**1.9%**	**16.0**
STATE Total:	**45.3%**	**51.0%**	**56.6%**	**62.3%**	**68.0%**	

* Goals displayed in bold lettering
* The table above gives the absolute difference in percentage points for a given achievement gap.
* Example: For Gender Gap in 2009, the female proficiency equals 51.7% and male equals 39.9% giving an absolute gap of 10.8%
Source: OSSE: www.nclb.osse.dc.gov

A1(iii)(b) – ESEA Goals – Achievement Gap

ESEA Absolute Achievement Gap Goals – Math - Percent of Students Scoring Proficient or Advanced (2009 –2013)						
	2009	**2010**	**2011**	**2012**	**2013**	**Percentage Point Decrease in Gap ('09-'13)**
Race/Ethnicity - Calculated as the amount a given ethnicity is below proficiency of (White/Non-Hispanic)						
Asian/Pacific Islanders	-0.5%	**-0.5%**	**-0.5%**	**-0.5%**	**-0.5%**	**0.0**
Black/Non-Hispanic	45.5%	**40.5%**	**35.5%**	**30.5%**	**25.5%**	**20.0**
Hispanic	32.5%	**27.5%**	**22.5%**	**17.5%**	**12.5%**	**20.0**
Gender - Calculated as (proficiency for females - proficiency for males)						
Female – Male	4.4%	**5.8%**	**4.3%**	**2.8%**	**1.3%**	**3.1**
SPED - Calculated as (proficiency for non-disabled students - proficiency for special needs students)						
Non-disabled – SPED	34.1%	**33.2%**	**32.2%**	**31.2%**	**30.2%**	**3.8**
English Proficiency - Calculated as (proficiency for non-LEP/NEP - proficiency for LEP/NEP)						
Non-LEP/NEP - LEP/NEP	-9.0%	**-6.0%**	**-4.4%**	**-2.7%**	**-1.0%**	**8.0**
Econ. Status - Calculated a s (proficiency for non-disadvantaged - proficiency for disadvantaged)						
Econ. Disadvantaged	15.5%	**12.0%**	**8.5%**	**5.0%**	**1.5%**	**14.0**
STATE Total:	**44.8%**	**50.4%**	**56.1%**	**61.7%**	**67.4%**	

* Goals displayed in bold lettering
* The table above gives the absolute difference in percentage points for a given achievement gap.
* Example: For Gender Gap in 2009, the female proficiency equals 47% and male equals 42.6% giving an absolute gap of 4.4%

Source: OSSE website: www.nclb.osse.dc.gov

A1(iii)(b) - NAEP Score Goals - Achievement Gap

NAEP SCORE GOALS – Absolute Achievement Gap – 4th Grade Math (2007 – 2013)					
	2007	**2009**	**2011**	**2013**	**Decrease in Gap ('09 - '13)**
All students	214	219	**224**	**229**	
Gender - Calculated as (female score - male score)					
Female – Male	1	3	**2**	**0**	**3**
Race/Ethnicity - Calculated as (white student score - specific subgroup score)					
Black	53	57	**51**	**49**	**8**
Hispanic	42	43	**42**	**39**	**4**
SPED - Calculated as (Not SPED score - SPED score)					
Not SPED – SPED	28	29	**28**	**22**	**7**
Free & Reduced Lunch - Calculated as (Not FRL score - FRL score)					
Not FRL – FRL	21	31	**27**	**26**	**5**
English Language Learners - Calculated as (not-ELL score - ELL score)					
Not-ELL – ELL	5	5	**4**	**3**	**2**
Source: National Assessment of Educational Progress: http://nces.ed/gov/nationsreportcard/naepdata/					

A1(iii)(b) - NAEP Score Goals - Achievement Gap

NAEP SCORE GOALS – Absolute Achievement Gap – 8th Grade Math (2007 – 2013)					
	2007	**2009**	**2011**	**2013**	**Decrease in Gap ('09 - '13)**
All students	248	254	**259**	**264**	
Gender - Calculated as (female score - male score)					
Female – Male	0	3	**2**	**1**	**2**
Race/Ethnicity - Calculated as (white student score - specific subgroup score)					
Black	74	72	**69**	**64**	**8**
Hispanic	68	56	**55**	**51**	**5**
SPED - Calculated as (Not SPED score - SPED score)					
Not SPED – SPED	41	46	**43**	**41**	**5**
Free & Reduced Lunch - Calculated as (Not FRL score - FRL score)					
Not FRL – FRL	16	25	**23**	**20**	**5**
English Language Learners - Calculated as (not-ELL score - ELL score)					
Not-ELL – ELL	23	24	**22**	**20**	**4**

Source: National Assessment of Educational Progress: http://nces.ed/gov/nationsreportcard/naepdata/

A1(iii)(b) - NAEP Score Goals - Achievement Gap

NAEP SCORE GOALS – Absolute Achievement Gap – 4th Grade Reading (2007 – 2013)					
	2007	**2009**	**2011**	**2013**	**Decrease in Gap ('09 - '13)**
All students	197	202	**208**	**213**	
Gender - Calculated as (female score - male score)					
Female – Male	6	8	**5**	**2**	**6**
Race/Ethnicity - Calculated as (white student score - specific subgroup score)					
Black	66	60	**57**	**54**	**6**
Hispanic	52	49	**46**	**43**	**6**
SPED - Calculated as (Not SPED score - SPED score)					
Not SPED – SPED	37	39	**36**	**35**	**4**
Free & Reduced Lunch - Calculated as (Not FRL score - FRL score)					
Not FRL – FRL	28	33	**24**	**19**	**14**
English Language Learners - Calculated as (not-ELL score - ELL score)					
Not-ELL – ELL	-1	8	**4**	**0**	**8**
Source: National Assessment of Educational Progress: http://nces.ed/gov/nationsreportcard/naepdata/					

A1(iii)(b) - NAEP Score Goals - Achievement Gap

NAEP SCORE GOALS – Absolute Achievement Gap – 8th Grade Reading (2007 – 2013)					
	2007	**2009**	**2011**	**2013**	**Decrease in Gap ('09 - '13)**
All students	241	242	**247**	**252**	
Gender - Calculated as (female score - male score)					
Female – Male	10	12	**7**	**2**	**10**
Race/Ethnicity - Calculated as (white student score - specific subgroup score)					
Black	65	**62****	**60**	**55**	**7**
Hispanic	53	**53****	**52**	**48**	**5**
SPED - Calculated as (Not SPED score - SPED score)					
Not SPED – SPED	33	40	**33**	**26**	**14**
Free & Reduced Lunch - Calculated as (Not FRL score - FRL score)					
Not FRL – FRL	19	19	**15**	**13**	**6**
English Language Learners - Calculated as (not-ELL score - ELL score)					
Not-ELL – ELL	6	**4****	**2**	**1**	**3**

** Data have an inadequate sample size of a given subgroup; data are projected
Source: National Assessment of Educational Progress: http://nces.ed/gov/nationsreportcard/naepdata/

A1(iii)(d) College Enrollment and Credit Attainment Goals

College Enrollment Goals (2009 – 2013)					
	2009	**2010**	**2011**	**2012**	**2013**
STATEWIDE	39.2%	**44.2%**	**49.2%**	**54.2%**	**59.2%**
DCPS	38.7%	**43.7%**	**48.7%**	**53.7%**	**58.7%**
PCSB	40.4%	**45.4%**	**50.4%**	**55.4%**	**60.4%**

* College enrollment based on DCTAG enrollment data, which from the latest report referencing 2006 is estimated to capture 80-85% of seniors.
Source: OSSE: www.nclb.osse.dc.gov, District of Columbia Public Charter School Board

For D.C. Graduates – Percent of College Freshman Returning for a Second Year – Goals (2007 – 2013)						
	2007	**2008**	**2009**	**2010**	**2011**	**2012**
% of Freshman Returning for 2nd Year	83.0%	78.4%	**80.9%**	**83.4%**	**85.9%**	**88.4%**

* 2009 data are not available because the senior graduates of 2009 have not yet finished their first year of college.
* College enrollment based on DCTAG enrollment data, which from the latest report referencing 2006 is estimated to capture 80-85% of seniors.
Source: OSSE: www.nclb.osse.dc.gov, District of Columbia Public Charter School Board

Appendix A1.7

Projected Student Achievement Growth absent RTTT Funding

A1(iii)(a) – Statewide Goals – w/o RTTT Funding

Without RTTT Funding						
STATEWIDE ESEA ASSESSMENT GOALS – Percent of Students Scoring Proficient or Advanced (2009 – 2013)						
	2009	**2010**	**2011**	**2012**	**2013**	**Percentage Point Proficiency Gain ('09 – '13)**
Reading	45%	**48%**	**50%**	**53%**	**55%**	**10.0**
Math	45%	**47%**	**50%**	**52%**	**55%**	**10.0**

* Goals are displayed in bold lettering
Source: OSSE website: www.nclb.osse.dc.gov

Without RTTT Funding						
STATEWIDE NAEP SCORE GOALS (2007 – 2013)						
	2007	2009	**2011**	**2013**	**4 Year Gain**	**6 Year Gain**
4th Grade Reading	197	202	**203**	**205**	**3**	**8**
4th Grade Math	214	219	**221**	**224**	**5**	**10**
8th Grade Reading	241	242	**244**	**246**	**4**	**5**
8th Grade Math	248	254	**256**	**259**	**5**	**11**

* Goals are displayed in bold lettering
Source: National Assessment of Educational Progress: http://nces.ed/gov/nationsreportcard/naepdata/

A1(iii)(a) – ESEA Goals by Subgroup – w/o RTTT

Without RTTT Funding ESEA GOALS by Subgroup – READING – Percent of Students Scoring Proficient or Advanced (2009 – 2013)						
	2009	**2010**	**2011**	**2012**	**2013**	**Percentage Point Proficiency Gain ('09 –'13)**
Race/Ethnicity						
Asian/Pacific Islanders	74.1%	**75.6%**	**77.1%**	**78.6%**	**80.1%**	**6.0**
Black/Non-Hispanic	41.8%	**44.4%**	**47.0%**	**49.7%**	**52.3%**	**10.5**
Hispanic	48.7%	**51.4%**	**54.0%**	**56.6%**	**59.2%**	**10.5**
White/Non-Hispanic	87.6%	**88.2%**	**88.8%**	**89.5%**	**90.1%**	**2.5**
Gender						
Female	50.7%	**52.7%**	**54.7%**	**56.7%**	**58.7%**	**8.0**
Male	39.9%	**42.9%**	**45.9%**	**48.9%**	**51.9%**	**12.0**
SPED						
Disabled	18.4%	**21.5%**	**24.9%**	**28.2%**	**31.5%**	**13.1**
Non-disabled	51.4%	**53.7%**	**56.0%**	**58.3%**	**60.6%**	**9.3**
English Proficiency						
LEP/NEP	44.7%	**47.3%**	**49.8%**	**52.3%**	**54.8%**	**10.1**
Non-LEP/NEP	45.4%	**47.9%**	**50.4%**	**52.9%**	**55.4%**	**10.0**
Econ. Status						
Econ. Disadvantaged	39.9%	**43.0%**	**46.1%**	**49.2%**	**52.3%**	**12.4**
Non-Econ. Disadvantaged	57.8%	**58.9%**	**60.0%**	**61.1%**	**62.2%**	**4.4**
STATE Total:	45.3%	**47.8%**	**50.3%**	**52.8%**	**55.3%**	**10.0**

* Goals are displayed in bold lettering
Source: OSSE: www.nclb.osse.dc.gov

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A1(iii)(a) – ESEA Goals by Subgroup – w/o RTTT

Without RTTT Funding ESEA GOALS by Subgroup – MATH – Percent of Students Scoring Proficient or Advanced (2009 – 2013)						
	2009	**2010**	**2011**	**2012**	**2013**	**Percentage Point Proficiency Gain ('09 –'13)**
Race/Ethnicity						
Asian/Pacific Islanders	86.5%	**87.5%**	**88.5%**	**89.5%**	**90.5%**	**4.0**
Black/Non-Hispanic	40.5%	**43.1%**	**45.7%**	**48.3%**	**51.0%**	**10.5**
Hispanic	53.4%	**56.1%**	**58.7%**	**61.3%**	**64.0%**	**10.5**
White/Non-Hispanic	86.0%	**86.6%**	**87.2%**	**87.8%**	**88.5%**	**2.5**
Gender						
Female	46.9%	**50.6%**	**52.9%**	**55.1%**	**57.4%**	**10.5**
Male	42.6%	**43.9%**	**46.6%**	**49.4%**	**52.1%**	**9.5**
SPED						
Disabled	16.9%	**20.1%**	**23.4%**	**26.7%**	**30.0%**	**13.1**
Non-disabled	51.0%	**53.3%**	**55.6%**	**57.9%**	**60.3%**	**9.3**
English Proficiency						
LEP/NEP	53.0%	**54.4%**	**57.2%**	**60.0%**	**62.8%**	**9.8**
Non-LEP/NEP	43.9%	**46.4%**	**48.9%**	**51.3%**	**53.8%**	**9.9**
Econ. Status						
Econ. Disadvantaged	40.1%	**43.0%**	**46.0%**	**48.9%**	**51.9%**	**11.8**
Non-Econ. Disadvantaged	55.6%	**57.0%**	**58.5%**	**59.9%**	**61.4%**	**5.8**
STATE Total:	44.8%	**47.3%**	**49.8%**	**52.3%**	**54.8%**	**10.0**

* Goals are displayed in bold lettering
Source: OSSE: www.nclb.osse.dc.gov

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A1(iii)(a) – NAEP Goals by Subgroup – w/o RTTT

Without RTTT Funding NAEP SCORE GOALS – 4th Grade Reading (2007 – 2013)						
	2007	**2009**	**2011**	**2013**	**4 Year Gain**	**6 Year Gain**
All students	197	202	**203**	**205**	**6**	**8**
Male	194	198	**201**	**204**	**7**	**10**
Female	200	206	**206**	**205**	**6**	**6**
White	258	256	**260**	**262**	**4**	**4**
Black	192	196	**198**	**201**	**6**	**9**
Hispanic	206	207	**210**	**213**	**6**	**7**
SPED	162	165	**173**	**182**	**11**	**20**
Not SPED	199	204	**206**	**208**	**6**	**9**
FRL	188	193	**196**	**200**	**9**	**12**
Not FRL	216	226	**226**	**226**	**10**	**10**
ELL	198	194	**201**	**205**	**5**	**7**
Not ELL	197	202	**203**	**205**	**6**	**8**

* Goals are displayed in bold lettering
Source: National Assessment of Educational Progress: http://nces.ed/gov/nationsreportcard/naepdata/

A1(iii)(a) – NAEP Goals by Subgroup – w/o RTTT

Without RTTT Funding NAEP SCORE GOALS - 8th Grade Reading (2007 – 2013)						
	2007	2009	2011	2013	4 Year Gain	6 Year Gain
All students	241	242	**244**	**246**	**4**	**5**
Male	235	236	**241**	**245**	**6**	**10**
Female	245	248	**247**	**248**	**2**	**3**
White**	**303**	**303**	**303**	**304**	**1**	**1**
Black	238	239	**241**	**243**	**3**	**5**
Hispanic	249	249	**251**	**254**	**4**	**5**
SPED	210	205	**215**	**225**	**5**	**15**
Not SPED	243	245	**247**	**248**	**3**	**5**
FRL	234	237	**239**	**242**	**5**	**8**
Not FRL	253	256	**256**	**256**	**3**	**3**
ELL**	**235**	**238**	**240**	**243**	**6**	**8**
Not ELL	241	243	**245**	**246**	**4**	**5**

* Goals displayed in bold lettering
** Data not available due to inadequate sample size; line item projected from historical data
Source: National Assessment of Educational Progress: http://nces.ed/gov/nationsreportcard/naepdata/

A1(iii)(a) – NAEP Goals by Subgroup – w/o RTTT

Without RTTT Funding NAEP SCORE GOALS- 4th Grade Math (2007 – 2013)						
	2007	**2009**	**2011**	**2013**	**4 Year Gain**	**6 Year Gain**
All students	214	219	**221**	**224**	**5**	**10**
Male	213	218	**221**	**224**	**6**	**11**
Female	214	221	**222**	**224**	**3**	**10**
White	262	270	**271**	**272**	**2**	**10**
Black	209	213	**216**	**219**	**6**	**10**
Hispanic	220	227	**228**	**232**	**5**	**12**
SPED	188	193	**197**	**202**	**9**	**14**
Not SPED	216	222	**224**	**226**	**4**	**10**
FRL	207	211	**213**	**217**	**6**	**10**
Not FRL	228	242	**244**	**245**	**3**	**17**
ELL	209	215	**218**	**224**	**9**	**15**
Not ELL	214	220	**221**	**224**	**4**	**10**

* Goals displayed in bold lettering
Source: National Assessment of Educational Progress: http://nces.ed/gov/nationsreportcard/naepdata/

A1(iii)(a) – NAEP Goals by Subgroup – w/o RTTT

Without RTTT Funding NAEP SCORE GOALS - 8th Grade Math (2007 – 2013)						
	2007	**2009**	**2011**	**2013**	**4 Year Gain**	**6 Year Gain**
All students	248	254	**256**	**259**	**5**	**11**
Male	248	252	**255**	**259**	**7**	**11**
Female	248	255	**257**	**259**	**4**	**11**
White*	**319**	**321**	**320**	**322**	**1**	**3**
Black	245	249	**251**	**254**	**5**	**9**
Hispanic	251	265	**267**	**270**	**5**	**19**
SPED	211	213	**217**	**223**	**10**	**12**
Not SPED	252	259	**261**	**263**	**4**	**11**
FRL	243	247	**249**	**252**	**5**	**9**
Not FRL	259	272	**273**	**275**	**3**	**16**
ELL*	226	**230**	**236**	**242**	**12**	**16**
Not ELL	249	254	**256**	**259**	**5**	**10**

* Scores for white students in 2007 and 2009 and ELL in 2009 were not available due to inadequate sample size. 2007 and 2009 figures are estimated using historical scores.
Source: National Assessment of Educational Progress: http://nces.ed/gov/nationsreportcard/naepdata/

A1(iii)(b) – ESEA Goals – Achievement Gap – w/o RTTT

Without RTTT Funding ESEA Absolute Achievement Gap Goals - Reading - Percent of Students Scoring Proficient or Advanced (2009-2013)						
	2009	**2010**	**2011**	**2012**	**2013**	**Percentage Point Decrease in Gap ('09-'13)**
Race/Ethnicity - Calculated as the amount a given ethnicity is below proficiency of (White/Non-Hispanic)						
Asian/Pacific Islanders	13.5%	**12.6%**	**11.8%**	**10.9%**	**10.0%**	**3.5**
Black/Non-Hispanic	45.8%	**43.8%**	**41.8%**	**39.8%**	**37.8%**	**8.0**
Hispanic	38.9%	**36.8%**	**34.8%**	**32.8%**	**30.8%**	**8.0**
Gender - Calculated as (proficiency for females - proficiency for males)						
Female – Male	10.8%	**9.8%**	**8.8%**	**7.8%**	**6.8%**	**4.0**
SPED - Calculated as (proficiency for non-disabled students - proficiency for special needs students)						
Non-disabled – SPED	33.0%	**31.1%**	**29.1%**	**27.1%**	**25.1%**	**7.8**
English Proficiency - Calculated as (proficiency for non-LEP/NEP - proficiency for LEP/NEP)						
Non-LEP/NEP - LEP/NEP	0.7%	**0.6%**	**0.6%**	**0.6%**	**0.6%**	**0.1**
Econ. Status - Calculated as (proficiency for non-disadvantaged - proficiency for disadvantaged)						
Econ. Disadvantaged	17.9%	**15.9%**	**13.9%**	**11.9%**	**9.9%**	**8.0**
STATE Total:	45.3%	**47.8%**	**50.3%**	**52.8%**	**55.3%**	

* Goals displayed in bold lettering
* The table above gives the absolute difference in percentage points for a given achievement gap.
* Example: For Gender Gap in 2009, the female proficiency equals 50.7% and male equals 39.9% giving an absolute gap of 10.8%

Source: OSSE website: www.nclb.osse.dc.gov

A1(iii)(b) – ESEA Goals – Achievement Gap – w/o RTTT

Without RTTT Funding ESEA Absolute Achievement Gap Goals - Math - Percent of Students Scoring Proficient or Advanced (2009-2013)						
	2009	**2010**	**2011**	**2012**	**2013**	**Percentage Point Decrease in Gap ('09-'13)**
Race/Ethnicity - Calculated as the amount a given ethnicity is below proficiency of (White/Non-Hispanic)						
Asian/Pacific Islanders	-0.5%	**-0.9%**	**-1.3%**	**-1.6%**	**-2.0%**	**1.5**
Black/Non-Hispanic	45.5%	**43.5%**	**41.5%**	**39.5%**	**37.5%**	**8.0**
Hispanic	32.5%	**30.5%**	**28.5%**	**26.5%**	**24.5%**	**8.0**
Gender - Calculated as (proficiency for females - proficiency for males)						
Female – Male	4.4%	**6.8%**	**6.3%**	**5.8%**	**5.3%**	**-0.9**
SPED - Calculated as (proficiency for non-disabled students - proficiency for special needs students)						
Non-disabled – SPED	34.1%	**32.2%**	**30.2%**	**28.2%**	**26.2%**	**7.8**
English Proficiency - Calculated as (proficiency for non-LEP/NEP - proficiency for LEP/NEP)						
Non-LEP/NEP - LEP/NEP	-9.0%	**-8.0%**	**-8.4%**	**-8.7%**	**-9.0%**	**0.0**
Econ. Status - Calculated as (proficiency for non-disadvantaged - proficiency for disadvantaged)						
Econ. Disadvantaged	15.5%	**14.0%**	**12.5%**	**11.0%**	**9.5%**	**6.0**
STATE Total:	44.8%	**47.3%**	**49.8%**	**52.3%**	**54.8%**	

* Goals displayed in bold lettering
* The table above gives the absolute difference in percentage points for a given achievement gap.
* Example: For Gender Gap in 2009, the female proficiency equals 47% and male equals 42.6% giving an absolute gap of 4.4%
Source: OSSE website: www.nclb.osse.dc.gov

A1(iii)(b) - NAEP Score Goals - Achievement Gap – w/o RTTT

Without RTTT Funding NAEP SCORE GOALS – Absolute Achievement Gap – 4th Grade Reading (2007 – 2013)					
	2007	**2009**	**2011**	**2013**	**Decrease in Gap ('09 - '13)**
All students	197	202	**202**	**205**	
Gender - Calculated as (female score - male score)					
Female – Male	6	8	**6**	**4**	**4**
Race/Ethnicity - Calculated as (white student score - specific subgroup score)					
Black	66	60	**58**	**57**	**3**
Hispanic	52	49	**48**	**47**	**2**
SPED - Calculated as (Not SPED score - SPED score)					
Not SPED – SPED	37	39	**38**	**37**	**2**
Free & Reduced Lunch - Calculated as (Not FRL score - FRL score)					
Not FRL – FRL	28	33	**30**	**27**	**6**
English Language Learners - Calculated as (not-ELL score - ELL score)					
Not-ELL – ELL	-1	8	**5**	**2**	**6**

* Goals displayed in bold lettering
Source: National Assessment of Educational Progress: http://nces.ed/gov/nationsreportcard/naepdata/

A1(iii)(b) - NAEP Score Goals - Achievement Gap – w/o RTTT

Without RTTT Funding NAEP SCORE GOALS – Absolute Achievement Gap – 8th Grade Reading (2007 – 2013)					
	2007	**2009**	**2011**	**2013**	**Decrease in Gap ('09 – '13)**
All students	241	242	**244**	**246**	
Gender - Calculated as (female score - male score)					
Female – Male	10	12	**10**	**6**	**6**
Race/Ethnicity - Calculated as (white student score - specific subgroup score)					
Black	65	64**	**63**	**61**	**3**
Hispanic	54	53**	**52**	**50**	**3**
SPED - Calculated as (Not SPED score - SPED score)					
Not SPED – SPED	33	40	**35**	**30**	**10**
Free & Reduced Lunch - Calculated as (Not FRL score - FRL score)					
Not FRL – FRL	19	19	**16**	**14**	**5**
English Language Learners - Calculated as (not-ELL score - ELL score)					
Not-ELL – ELL	7	6**	**5**	**4**	**2**

* Goals displayed in bold lettering
** Data not available due to an inadequate sample size of a given subgroup; scores are projected
Source: National Assessment of Educational Progress: http://nces.ed.gov/nationsreportcard/naepdata/

A1(iii)(b) - NAEP Score Goals - Achievement Gap – w/o RTTT

Without RTTT Funding NAEP SCORE GOALS – Absolute Achievement Gap – 4th Grade Math (2007 – 2013)					
	2007	**2009**	**2011**	**2013**	**Decrease in Gap ('09 – '13)**
All students	214	219	**221**	**224**	
Gender - Calculated as (female score - male score)					
Female – Male	1	3	**1**	**0**	**3**
Race/Ethnicity - Calculated as (white student score - specific subgroup score)					
Black	53	57	**55**	**53**	**4**
Hispanic	42	43	**43**	**40**	**3**
SPED - Calculated as (Not SPED score - SPED score)					
Not SPED – SPED	28	29	**27**	**24**	**5**
Free & Reduced Lunch - Calculated as (Not FRL score - FRL score)					
Not FRL – FRL	21	31	**31**	**28**	**3**
English Language Learners - Calculated as (not-ELL score - ELL score)					
Not-ELL – ELL	5	5	**3**	**0**	**5**

* Goals displayed in bold lettering
Source: National Assessment of Educational Progress: http://nces.ed/gov/nationsreportcard/naepdata/

A1(iii)(b) - NAEP Score Goals - Achievement Gap – w/o RTTT

Without RTTT Funding NAEP SCORE GOALS – Absolute Achievement Gap – 8th Grade Math (2007 – 2013)					
	2007	**2009**	**2011**	**2013**	**Decrease in Gap ('09 - '13)**
All students	248	254	**256**	**259**	
Gender - Calculated as (female score - male score)					
Female – Male	0	3	**2**	**0**	**3**
Race/Ethnicity - Calculated as (white student score - specific subgroup score)					
Black	74	72	**69**	**68**	**4**
Hispanic	68	56	**53**	**52**	**4**
SPED - Calculated as (Not SPED score - SPED score)					
Not SPED – SPED	41	46	**44**	**40**	**6**
Free & Reduced Lunch - Calculated as (Not FRL score - FRL score)					
Not FRL – FRL	16	25	**24**	**23**	**2**
English Language Learners - Calculated as (not-ELL score - ELL score)					
Not-ELL – ELL	23	24	**20**	**17**	**7**
Source: National Assessment of Educational Progress: http://nces.ed/gov/nationsreportcard/naepdata/					

A1(iii)(d) – College Enrollment and Credit Attainment Goals – w/o RTTT

Without RTTT Funding

College Enrollment Goals (2009 – 2013)

	2009	2010	2011	2012	2013
STATEWIDE	39.2%	**41.2%**	**43.2%**	**45.2%**	**47.2%**
DCPS	38.7%	**40.7%**	**42.7%**	**44.7%**	**46.7%**
PCSB	40.4%	**42.4%**	**44.4%**	**46.4%**	**48.4%**

* College enrollment based on DCTAG enrollment data, which from the latest report referencing 2006 is estimated to capture 80-85% of seniors. Enrollment data above is for the class graduating in the Spring of 2009.
Source: OSSE: www.nclb.osse.dc.gov, District of Columbia Public Charter School Board

Without RTTT Funding

For D.C. Graduates – Percent of College Freshman Returning for a Second Year – Goals (2007 – 2013)

	2007	2008	2009	2010	2011	2012
% of Freshman Returning for 2nd Year	83.0%	78.4%	**79.4%**	**80.4%**	**81.4%**	**82.4%**

* College enrollment based on DCTAG enrollment data, which from the latest report referencing 2006 is estimated to capture 80-85% of seniors.
Source: OSSE: www.nclb.osse.dc.gov, District of Columbia Public Charter School Board

Appendix A2.1

Implementation Plan

	RTTT Project Plan	Owner	Apr-Jun 2010	July-Sept 2010	Oct-Dec 2010	Jan-Mar 2011	Apr-Jun 2011	July-Sept 2011	Oct-Dec 2011	Jan-Mar 2012	Apr-Jun 2012	July-Sept 2012	Oct-Dec 2012	Jan-Mar 2013	Apr-Jun 2013	July-Sept 2013	Oct-Dec 2013	Jan-Mar 2014	Apr-Jun 2014	July-Sept 2014	Oct-Dec 2014
SECTION B (3) - Supporting the Transition to Enhanced Standards and																					
A	***Implement a Fast, Aggressive Rollout Plan for Common Core Standards and Assessments***																				
1	*Adopt Standards*	*State Board of Education*	X																		
2	*Hold Community Meetings to inform parents and community members*	*OSSE, LEAs*	X	X	X																
3	*Design and Develop Core Standards Materials*	*OSSE*			X	X															
i.	*Write introductory material and develop vendor contract*	*OSSE*			X	X															
ii.	*Hire graphic designer and printer to produce booklets and brochures*	*OSSE*			X	X															
iii.	*Hire web designer to launch website*	*OSSE*			X	X															
iv.	*Manage all vendors to completion*	*OSSE*			X	X															
4	*Revise DC-CAS; Create Interim Assessments*	*OSSE*			X																
i.	*Develop vendor contract*	*OSSE*			X																
ii.	*Hire vendor to work on revision of DCCAS for administration in 2012*	*OSSE*			X																
	Work with Technical Advisory Council to ensure transition maintains achievement standards	*OSSE*																			
iii.	*Interim Assessment: create a list of vendor possibilities*	*OSSE*			X																
iv.	*Interim Assessment: sign contract with approved vendor*	*LEAs*				X	X														
v.	*Organize meetings for LEAs to meet and discuss interim assessment purchasing partnerships*	*OSSE*			X																
vi.	*Manage all vendors to completion*	*OSSE*		X	X	X	X	X	X	X											
vii	*Implement new Interim Assessments aligned to common standards*	*LEAs*						X	X	X	X										
B	***Create, Organize, and Fund a Common Core Standards Working Group***																				
1	*Hold Common Core Standards Working Group Meetings*	*OSSE*			X	X	X	X													
i.	*Invite LEAs to put together leadership teams to participate*	*OSSE*			X	X	X	X													
ii.	*Participate in working group meetings (voluntary)*	*LEAs*			X	X	X	X													
iii.	*Develop collaboration infrastructure*	*OSSE*			X	X	X	X													
3	*Conducct Information Sessions with Parents and Other Community Members*	*LEAs*						X	X	X	X	X	X	X	X	X	X	X	X	X	X
2	*Provide School-Level Professional Development on Common Core Standards*	*LEAs*						X	X	X	X	X	X	X	X	X	X	X	X	X	X
C	***Create Standards Entry Points for Differentiated Learning***																				
1	*Partner with a state Dept. of Education to create Standards Entry Points for Differentiated Learning*	*OSSE*		X	X	X	X														
i.	*Develop vendor contract for teacher training on Standards Entry Points*	*OSSE*							X												
ii	*Hire vendor to provide teacher training on Standards Entry Points*	*OSSE*							X												
iii.	*Manage vendor to completion*	*OSSE*		X	X	X	X														
iv.	*Fund a vendor to align the Special Education Data System with the Common Core Standards*	*OSSE*					X	X	X	X	X	X	X								
D	***Align High School Curricula and Graduation Requirements with College Entrance Requirements***																				
1	*Convene a P-20 Consortium (Fall 2010, monthly)*	*OSSE*			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
i.	*Identify and publish research priority*	*OSSE*				X															
ii.	*Solicit researchers*	*OSSE*				X															
iii.	*Contract with a research team*	*OSSE*					X														
2	*Work with DTN and local IHEs to collect data on the level of preparation of students graduating from DC high schools*	*OSSE*					X														
Section C (2) - Accessing and Using State Data																					
A	***Expand Capacity and Systems for Data Access***																				
1	*Create website that allows key stakeholders easy-to-use access to data through interactive web functions*	*OSSE*							X												
i.	*Outline functionalities required*	*OSSE*							X												
ii.	*Develop vendor process and/or execute in-house*	*OSSE*							X												
iii.	*Roll out new, interactive, user-friendly OSSE website*	*OSSE*							X												
2	*Hold community meetings to discuss with parents and other community members how data can be made more useful to them*	*OSSE*							X												

	RTTT Project Plan	Owner	Apr-Jun 2010	July-Sept 2010	Oct-Dec 2010	Jan-Mar 2011	Apr-Jun 2011	July-Sept 2011	Oct-Dec 2011	Jan-Mar 2012	Apr-Jun 2012	July-Sept 2012	Oct-Dec 2012	Jan-Mar 2013	Apr-Jun 2013	July-Sept 2013	Oct-Dec 2013	Jan-Mar 2014	Apr-Jun 2014	July-Sept 2014	Oct-Dec 2014
B	***Enhance Availability of Statewide Data to Key Stakeholders***	*OSSE*																			
1	*Determine statewide list of research priorities and encourage research studies through the P-20*	*OSSE*			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2	*Develop an online research request tool for easy access to data*	*OSSE*			X																
3	*Identify/create research-ready data sets, including assessment, enrollment, teacher & financial data*	*OSSE*							X	X	X	X	X	X	X	X	X	X	X	X	X
4	*Publish additional data to key stakeholders including parents, decision-makers, and researchers*	*OSSE*											X								
Section C (3) - Use Data to Improve Instruction																					
A	***Develop Instructional Improvement Systems Aligned to Data Systems***																				
1	*Identify preferred vendors capable of meeting the needs of LEAs for data-driven instruction and submit list to LEAs*	*OSSE*		X																	
2	*Identify, with external partners, current LEA capacities and needs with regard to instructional improvement systems*	*OSSE, LEAs*		X																	
3	*Submit a plan for using RTTT funds to adopt or expand an instructional improvement system*	*LEAs*		X																	
4	*Award grants to LEAs*	*OSSE*				X															
5	*Sign a contract with an OSSE-approved vendor*	*LEAs*					X														
6	*Implement instructional improvement systems*	*LEAs*											X								
B	***Support Participating LEAs in Providing Effective Professional Development on Data-Driven Instruction***																				
1	*Provide formula funding for one of the following:*	*OSSE*							X	X	X	X	X	X	X	X	X	X	X	X	X
i.	*Submit plan to hire a school-based Instructional Data Analyst/Coach*	*LEAs*							X	X	X	X	X	X	X	X	X	X	X	X	X
ii.	*Submit plan to train and offer stipends to data leads in schools*	*LEAs*							X	X	X	X	X	X	X	X	X	X	X	X	X
iii.	*Submit plan for ongoing, job-embedded professional development on data-driven instruction*	*LEAs*							X	X	X	X	X	X	X	X	X	X	X	X	X
2	*Submit best practices on uses of data-driven instruction to the Individualized PD Platform*	*OSSE*														X	X	X	X	X	X
3	*Provide teachers with regular planning time for using data to inform instruction*	*LEAs*							X	X	X	X	X	X	X	X	X	X	X	X	X
C	***Increase the Availability and Access of Data to Researchers***																				
1	*Publish a list of research priorities for DC and encourage development of studies through the P-20*	*OSSE*			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2	*Develop an online research request tool for easy access to data*	*OSSE*			X																
3	*Identify and create a portfolio of research-ready data sets*	*OSSE*							X	X	X	X	X	X	X	X	X	X	X	X	X
Section D (2) - Improving Teacher & Principal Effectiveness Based on Performance																					
A	***Ensure That All LEAs Have Student Growth Data for Tested Grades***																				
1	*Select members of a Student Growth Measure Task Force responsible for overseeing implementation of a measure for all LEAs*	*OSSE*	X																		
2	*Determine the statewide growth measure and draft a concrete plan*	*Student Growth Measure Task Force*		X																	
3	*Build relevant data systems*	*Student Growth Measure Task Force*			X	X	X														
4	*Use the student growth measure for DC-CAS tested grades and subjects for educator evaluations*	*LEAs*						X	X	X	X	X	X	X	X	X	X	X	X	X	X
B	***Expland Pilot Growth Measure to Additional Grades/Subjects for Teacher & Principal Evaluation Purposes***																				
1	*Convene the Student Growth Measure Task Force to: a) develop priority list of grades and content areas for expanded coverage, b) develop specifications for assessments that may be used to identify growth measures that are appropriate for the purposes of teacher evaluation*	*OSSE, Student Growth Measure Task Force*		X																	
2	*Identify growth assessments that cover priority grades and content areas to use for a two-year trial*	*LEAs*			X																

	RTTT Project Plan	Owner	Apr-Jun 2010	July-Sept 2010	Oct-Dec 2010	Jan-Mar 2011	Apr-Jun 2011	July-Sept 2011	Oct-Dec 2011	Jan-Mar 2012	Apr-Jun 2012	July-Sept 2012	Oct-Dec 2012	Jan-Mar 2013	Apr-Jun 2013	July-Sept 2013	Oct-Dec 2013	Jan-Mar 2014	Apr-Jun 2014	July-Sept 2014	Oct-Dec 2014
3	*Based on two-year trial, confirm the menu of assessments appropriate for measuring priority non-tested grades and subjects*	*Student Growth Measure Task Force*										X									
4	*Adopt new assessments aligned with evaluations*	*LEAs*											X								
5	*Devise other methods for expanding the grades and subject areas for which a growth measure may be calculated*	*LEAs*											X	X	X	X	X				
6	*Share best practices among LEAs related to expanding the growth measure across grades and subject areas and using new assessments for the purposes of teacher evaluation*	*Student Growth Measure Task Force*											X	X	X	X	X	X	X	X	X
C	***Develop Robust Teacher and Principal Evaluation Systems***																				
1	*Publish requirements for teacher an principal evaluation systems*	*OSSE*	X																		
2	*Review Plans for LEA Evaluation Systems to ensure they meet the requirements*	*OSSE*							X												
3	*Expand and refine IMPACT*	*DCPS*		X	X	X	X	X	X	X	X	X	X								
i.	*Submit a plan to OSSE for expansion and refinement of IMPACT*	*DCPS*		X																	
ii.	*Involve teachers and principals in plans for expansion and refinement of IMPACT*	*DCPS*		X																	
4	*Submit a plan to OSSE for how DCPS will approach principal evaluation*	*DCPS*		X																	
5	*Submit plans to OSSE for how charter LEAs will approach teacher and principal evaluation*	*Charter LEAs*		X																	
6	*Leverage lessons from DCPS and other charters in developing human capital evaluation systems*	*Human Capital Task Force*			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
D	***Use Evaluations to Make Human Capital Decisions***																				
1	*Ensure that all evaluation systems include annual evaluations*	*OSSE*	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2	*Use evaluation to support human capital decisions*	*LEAs*	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
E	***Collaborate Across Sectors to Support Best Practices in Human Capital***																				
1	*Select members of a Human Capital Task Force*	*OSSE*	X																		
	Engage in discussions about the implementation of RTTT and other statewide human capital initiatives	*Human Capital Task Force*	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Section D (3) - Ensuring Equitable Distribution of Effective Teachers & Principals																					
A	***Improve Process for Analyzing Equitable Distribution of Effectiveness***																				
1	*Build capacity into evaluation systems to determine effectiveness of teachers within schools*	*LEAs*						X													
2	*Submit percentages of effective and highly effective teachers and administrators by school to OSSE*	*LEAs*										X				X				X	
3	*Develop state-wide picture of effectiveness distribution based on the correlation of high-poverty and high-minority schools to teacher effectiveness*	*OSSE*											X				X				X
4	*Require LEAs to submit a plan to increase teacher effectiveness in the 25% of schools for which high-poverty/high-minority and low effectiveness are most highly correlated*	*LEAs*											X				X				X
5	*Monitor and work with LEAs on corrective action plans where plans do not adequately address equity needs*	*OSSE*											X				X				X
B	***Engage in Smart Targeting***																				
1	*Engage in recruitment, selection, and retention strategies to increase the effectiveness of teachers in high-needs schools*	*LEAs*	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
C	***Improve Process for Analyzing Effectiveness of Teachers in Hard-to-Staff Areas***																				
1	*Build capacity into evaluation systems to sort effectiveness of teachers by content area*	*LEAs*							X												
2	*Develop, through coordination with LEAs, and publish a list of content areas identified as high-need by LEA*	*OSSE, LEAs*							X				X				X				X
3	*Submit percentages of effective and highly effective teachers and administrators by content area*	*LEAs*										X				X				X	
4	*Develop state-wide picture of effectiveness in high needs content areas*	*OSSE*											X				X				X

	RTTT Project Plan	Owner	Apr-Jun 2010	July-Sept 2010	Oct-Dec 2010	Jan-Mar 2011	Apr-Jun 2011	July-Sept 2011	Oct-Dec 2011	Jan-Mar 2012	Apr-Jun 2012	July-Sept 2012	Oct-Dec 2012	Jan-Mar 2013	Apr-Jun 2013	July-Sept 2013	Oct-Dec 2013	Jan-Mar 2014	Apr-Jun 2014	July-Sept 2014	Oct-Dec 2014
5	*Require LEAs to submit a plan to increase teacher effectiveness in the bottom 5 "high needs" content areas and grade levels*	*OSSE*											X				X				X
Section D (4) - Improving the Effectiveness of Teacher & Principal Preparation																					
A	***Evaluate and Support Preparatory Programs (alternative routes and IHE) on Teacher/Principal Effectiveness Measures***																				
1	*Collaborate with Preparation Programs to develop a list of information required from LEAs for creating the Prep Program Scorecard*	*OSSE*			X																
2	*Design Prep Program Scorecards with input from multiple stakeholders*	*OSSE*					X														
3	*Submit required information to OSSE*	*LEAs*										X				X				X	
4	*Match teachers to their certification programs*	*OSSE*										X				X				X	
5	*Create Prep Program Scorecards*	*OSSE*											X				X				X
6	*Establish a minimum threshold for performance & process for reapproval*	*OSSE*											X								
7	*Establish a process whereby OSSE supports programs in determining improvements to meet needs identified by the Prep Program Scorecard*	*OSSE*											X								
8	*Establish a process by which a program can demonstrate that it should be reconsidered for approval*	*OSSE*											X								
9	*Provide guidance to deans of IHEs and directors of alternative certification programs regarding new quality guidelines*	*OSSE*											X								
10	*Pilot Prep Program Scorecards and provide information to Preparation Programs*	*OSSE*											X	X	X	X	X	X	X	X	X
11	*Share Prep Program Scorecards with Prep Programs one week prior to making them public*	*OSSE*																			X
12	*Publish Scorecards to the OSSE website*	*OSSE*																			X
B	***Build Pipelines of Effective and Highly Effective Teachers, especially in Hard to Staff Areas***																				
1	*Issue RFP*	*OSSE*				X															
2	*Hold a competitive grant process for LEAs*	*OSSE*					X				X										
3	*Submit proposal for teacher pipeline funding*	*LEAs*					X				X										
4	*Award grants*	*OSSE*						X				X									
5	*Launch charter LEA-sponsored programs*	*LEAs*						X				X									
Section D (5) - Providing Effective Support to Teachers & Principals																					
A	***Launch Individualized PD Platform***																				
1	*Phase I: Build interface and connect IMPACT to PD platform*	*vendor under DCPS*	X	X	X	X															
2	*Phase II: Develop/acquire content, such as video exemplars of effective practice*	*vendor under DCPS*					X														
3	*Phase III: Add external PD providers such as online courses and higher level content so highly effective teachers go from "good to great"*	*vendor under DCPS*					X			X											
B	***Support Charter Professional Development Solutions Tied to Evaluations***																				
1	*Submit plans to OSSE for developing or purchasing professional development systems or strategies*	*participating Charter LEAs*									X										
	Review LEA plans and provide technical assistance	*OSSE*										X									
C	***Launch Learning Communities for Effectiveness (PLaCEs)***																				
1	*Work with OSSE to determine the parameters of an RFP that effectively captures the collaboration needs for statewide reform*	*Human Capital Task Force; OSSE*	X																		
2	*Issue RFP*	*OSSE*	X																		
3	*Apply for grant funding*	*LEA Collaboratives*	X			X				X											
4	*Award grants (3 rounds - Summer 2010 and Spring 2011, Spring 2012)*	*OSSE*		X			X				X										
5	*Implement plans*	*PLaCEs*			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
6	*Provide guidance to OSSE on how to effectively oversee and administer the PLaCEs*	*Human Capital Task Force*		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
7	*Review results from PLaCEs clusters*	*OSSE, Human Capital Task Force*																	X		
D	***Develop PD Tracking Capabilities in the Individualized PD Platform***																				

	RTTT Project Plan	Owner	Apr-Jun 2010	July-Sept 2010	Oct-Dec 2010	Jan-Mar 2011	Apr-Jun 2011	July-Sept 2011	Oct-Dec 2011	Jan-Mar 2012	Apr-Jun 2012	July-Sept 2012	Oct-Dec 2012	Jan-Mar 2013	Apr-Jun 2013	July-Sept 2013	Oct-Dec 2013	Jan-Mar 2014	Apr-Jun 2014	July-Sept 2014	Oct-Dec 2014
1	*Design a process for tracking online and offline PD experiences in My PD Platform*	*vendor under DCPS*			X	X	X	X	X	X	X										
2	*Compile PD effectiveness data stripped of personal identifiers and make available to researchers*	*OSSE*													X						
Section E (2) - Turning Around Lowest-Achieving Schools																					
A	***Identify and Plan for the Turnaround of Persistently Lowest-Achieving Schools***																				
1	*Finalize list of schools to turn around, including at least the ten schools identified and others within the bottom 20% to be determined*	*OSSE, DCPS, PCSB*	X																		
2	*Examine ranking of schools and eliminate (1) any schools for which an adequate intervention has occurred in the past two years and (2) any schools that may have been flagged due to the special populations they serve but that are performing effectively*	*OSSE (with DCPS or PCBS, as relevant)*	X																		
3	*Publish list of schools slated for turnaround*	*OSSE*		X				X		X											
4	*Revisit the adequacy and appropriateness of the definition outlined above for identifying the truly persistently lowest-achieving schools*	*OSSE, DCPS, PCSB*		X				X				X				X				X	
5	*Establish a detailed turnaround plan and timeline for each school slated for turnaround*	*OSSE/DCPS and OSSE/PCSB*	X	X	X	X	X	X	X	X											
6	*Plan for additional turnarounds for schools on the "persistently lowest achieving schools list"*	*OSSE/DCPS and OSSE/PCSB*						X				X				X				X	
B	***Provide Preparation Support for Potential Turnaround Teams***																				
1	*Establish new organizational chart and job responsibilities for the Office of Human Capital*	*DCPS*	X																		
2	*Submit these along with a sustainability plan to OSSE*	*DCPS*		X																	
3	*Hire new team members*			X	X																
1	*Upon identification of schools for turnaround, decide which schools will be turned around in which of the next three years and assemble administrative teams to take on the turnarounds*	*DCPS Office of School Innovation and the Office of Human Capital*			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2	*Fund planning years for administrative teams who will take on the turnaround of a school in the following school year*	*OSSE*			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
C	***Align School Modernization Efforts to Support School Turnarounc***																				
1	*Facilitate quarterly discussions between the Mayor's Office responsible for the Facilities Modernization Plan and the DCPS team responsible for planning and executing turnarounds*	*OSSE*		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
D	***Provide Differential Funding for Turnaround Schools***																				
1	*Develop a plan for use of differential funding for each school in turnaround*	*DCPS*	X				X				X				X				X		
2	*Provide differential funding for turnaround schools based on number of students served*	*DCPS*			X				X				X				X				X
E	***Ensure Capacity for Strong Management of Turnaround Partnership:***																				
1	*Establish new organization chart and job responsibilities for the Office of School Innovation*	*DCPS*	X																		
2	*Submit these, along with a sustainability plan to OSSE*	*DCPS*		X																	
3	*Hire new team members*	*DCPS*		X	X																
Priority #2 - STEM Education																					
A	***Develop a DC STEM Learning Network***																				
1	*Partner with national expert organization to develop and implement a DC STEM Learning Network and Coordinating Council*	*OSSE, LEAs*			X	X	X														

LEGEND	
OSSE	X
LEAs (all)	X
DCPS	X
Charter LEAs	X
Task Forces	X

Appendix A2.2

Implementation Action Items

DC Race to the Top: OSSE Implementation To-Do List

(Implementation activities outlined below include only those to be carried about by OSSE. Activities to be carried out by LEAs are included in the LEA Implementation To-Do List)

Section B3: Supporting the Transition to Enhanced Standards and High-Quality Assessments

(A) Implement a Fast, Aggressive Rollout Plan for Common Core Standards

- Hold Community Meetings to inform parents and community members (Spring-Fall 2010)
- Design and develop Core Standards Website (Fall-Winter 2010)
  - i. Create introductory material and develop vendor contract
  - ii. Hire web designer to launch website
  - iii. Manage vendors to completion
- Contract with vendor to align DC-CAS with Common Core Standards (Summer 2010)
  - i. Develop vendor contract for DCCAS
  - ii. Hire vendor to work on revision of DCCAS for administration in 2012 and oversee management of this contract
  - iii. Work with Technical Advisory Council to ensure the transition maintains achievement standards and does not disrupt trendlines in achievement
- Develop and implement interim assessments
  - i. Identify vendors capable of meeting the State requirements for interim assessments and publish list to LEAs (Fall 2010)
  - ii. Organize meetings for LEAs to meet and discuss interim assessment purchasing partnerships (Fall 2010)

(B) Create, Organize, and Fund a New Standards Working Group

- Hold Common Core Standards Working Group meetings (Fall 2010-Summer 2011)
  - i. Invite LEAs to create leadership teams to participate
  - ii. Develop collaboration infrastructure

(C) Create Entry Points for Differentiated Learning

- Partner with a state department of education to create *Standards Entry Points for Differentiated Learning*: Summer 2010-Spring 2011
- Contract with a vendor to provide teacher training on the *Standards Entry Points* (Fall 2011, ongoing)
- Fund a vendor to align the Special Education Data System (SEDS) with the Common Core Standards (Vendor hired by Spring 2011 with rollout in Fall 2012)

(D) Align High School Exit Criteria and College Entrance Requirements

- Convene a P-20 Consortium of 10-12 members (Fall 2010, monthly)
  - i. identify and publish research priority
  - ii. solicit researchers
  - iii. contract with a research team
- Work with DTN and local institutions of higher education to collect data on the level of preparation of students graduating from DC high schools. (Spring 2011)

Section C2: Accessing & Using State Data

(A) Expand Capacity and Systems for Data Access

- Create a new, user-friendly, language-accessible website that allows key stakeholders to more easily access data through interactive web functions and that tracks data downloads (Fall 2011)
  - i. Outline required functionality
  - ii. Develop vendor process
  - iii. Roll-out new, interactive, user-friendly OSSE website
- Hold community meetings to discuss with parents and other community members how data can be made more useful to them (Fall 2011)

(B) Enhance Availability of Statewide Data to Key Stakeholders

- Determine statewide list of research priorities and encourage development of research studies around those priorities through researchers involved in the P-20 Consortium (Fall 2010, ongoing)
- Develop an online research request tool that allows researchers or outside organizations to easily apply for access to data (Fall 2010)
- Identify/create research-ready data sets, including assessment, enrollment, teacher and financial data (Fall 2011, ongoing)
- Publish additional data to key stakeholders including parents, decision-makers, and researchers (Fall 2012)

Section C3: Use Data to Improve Instruction

(A) Develop Instructional Improvement Systems Aligned to Data Systems

- Identify preferred vendors capable of meeting the needs of LEAs for data-driven instruction and submit list to LEAs (Summer 2010)
- Identify, with external partners, current LEA capacities and needs with regard to instructional improvement systems (Summer 2010)
- Award grants to LEA consortia based on need and plan quality (Winter 2011)

(B) Support Participating LEAs in Providing Effective Professional Development on Data-Driven Instruction

- Provide formula funding for on-site Data Leads or full-time Data Analysts (Fall 2011, ongoing)
- Submit best practices on uses of data-driven instruction to the Individualized PD Platform (Summer 2013, ongoing)

(C) Increase the Availability and Access of Data to Researchers

- Publish a list of research priorities for DC and encourage development of studies around priorities through the P-20 Consortium (Fall 2010, ongoing)
- Develop an online research request tool that allows researchers or outside organizations to easily apply for access to data (Fall 2010)
- Identify/create research-ready data sets, including assessment, enrollment, teacher and financial data (Fall 2011, ongoing)

Section D2: Improving Teacher & Principal Effectiveness Based on Performance

(A) Ensure that All LEAs Have Access to Student Growth Data for Tested Grades

- Select members of a Student Growth Measure Task Force responsible for overseeing implementation of a measure for all LEAs (Spring 2010)
- Determine the statewide growth measure and draft a concrete plan (Summer 2010, Student Growth Measure Task Force, convened by OSSE)
- Build relevant data systems (Fall 2010 – Spring 2011, Student Growth Measure Task Force)

(B) Expand Value-Added Growth Measures to Additional Grades/Subjects for Teacher and Principal Evaluation Purposes

- Convene the Student Growth Measure Task Force to: a) develop priority list of grades and content areas for expanded coverage, b) develop specifications for assessments that may be used to identify growth measures that are appropriate for the purposes of teacher evaluation (Summer 2010, Student Growth Measure Task Force)
- Based on the two-year trial, confirm the menu of assessments appropriate for measuring priority non-tested grades and subjects (Summer 2012, Student Growth Measure Task Force)
- Share best practices among LEAs related to expanding the growth measure across grades and subject areas and using new assessments for the purposes of teacher evaluation (Fall 2012, ongoing, Student Growth Measure Task Force)

(C) Develop a Robust Teacher and Principal Evaluation System

- Publish requirements for teacher and principal evaluation systems (Spring 2010):

Teacher evaluation requirements: student growth counts for at least 50% of a teacher's evaluation, includes multiple measures for performance, divides effectiveness into four (4) tiers (e.g., highly effective, effective, minimally effective, ineffective), is conducted annually, and is used to inform human capital decisions.

Principal evaluation requirements: student outcomes metrics account for a significant proportion of a principal's evaluation (e.g., student growth, student performance); multiple qualitative measures are included (e.g., parent and staff surveys); school-specific goals will be included; effectiveness is divided into tiers (e.g., highly effective, effective, minimally effective, ineffective), is conducted annually, and is used to inform human capital decisions.

- Review plans for LEA evaluation systems to ensure that requirements are met (Fall 2011)

(D) Use Evaluations to Make Human Capital Decisions

- Work with LEAs to ensure human capital decisions are being made based on evaluations (see table D2.2 in application for specifics and timeline)

(E) Collaborate Across Sectors to Support Best Practices in Human Capital

- Select members of a Human Capital Task Force (to include representatives from DCPS, Charter LEAs, and OSSE) responsible for advising and directing the course of statewide human capital initiatives (Spring 2010)

- Engage in brainstorming and problem-solving discussions about the implementation of the RTTT initiatives and other statewide human capital initiatives (Spring 2010 and ongoing, Human Capital Task Force)

Section D(3): Ensuring Equitable Distribution of Effective Teachers & Principals

(A) Improve Process for Analyzing Equitable Distribution of Effectiveness

- Develop statewide picture of the distribution of effectiveness based on the correlation of high-poverty schools (a school in the highest quartile of schools in the State with respect to poverty level) to teacher effectiveness (annually, starting Fall 2012)
- Require LEAs to submit a plan to increase teacher effectiveness in the 25% of schools for which high-poverty and low-effectiveness are most highly correlated (annually, starting Fall 2012 and each Fall)
- Monitor and work with LEAs on corrective action plans where plans do not adequately address equity needs (annually, starting Fall 2012 and ongoing)

(C) Improve Process for Analyzing Effectiveness of Teachers in Hard-to-Staff Areas

- Develop, through coordination with LEAs, and publish a list of content areas identified as high-need by LEA (annually, starting Fall 2011)
- Develop statewide analysis of effectiveness in high-needs content areas (annually, starting Fall 2012)
- Require LEAs that show disproportionate ineffectiveness of teachers in hard-to-staff content areas to submit a plan to increase teacher effectiveness in the bottom 5 "high needs" content areas and grade levels (annually, starting Fall 2012)

Section D4: Improving the Effectiveness of Teacher & Principal Preparation Programs

(A) Evaluate Preparatory Programs (e.g., alternative certification and IHE) Based on Effectiveness

- Collaborate with Preparation Programs to develop a list of information required from LEAs for creating the Prep Program Scorecard (Fall 2010)
- Design Prep Program Scorecard with input from multiple stakeholders, including deans of IHEs and directors of alternative certification programs (Spring 2011)
- Match teachers to their certification programs (annually, starting Summer 2012, based on information submitted by LEAs)
- Create Prep Program Scorecards (annually, starting Fall 2012)
- Establish a threshold for performance such that, in addition to other conditions for non-renewal determined by the state, any credentialing program with more than 25% of second-year teacher graduates deemed ineffective by LEAs in 2015 will warrant review by the State and have program approval subject to revocation (Fall 2012)
- Establish a process whereby OSSE supports programs in determining improvements to meet needs identified by the Prep Program Scorecard (Fall 2012)
- Establish a process by which a program can demonstrate that it should be reconsidered for approval (Fall 2012)
- Provide guidance to deans of IHEs and directors of alternative certification programs regarding new quality guidelines (Fall 2012)

- Pilot Prep Program Scorecards and provide specific information to Preparation Programs regarding the specific performance of its graduates in relation to DC teacher/principal evaluation criteria to facilitate program improvements (Fall 2012- Fall 2014)
- Share Prep Program Scorecards with prep programs one week prior to making the scorecards public in order to ensure data are validated (annually, starting Fall 2014)
- Publish the Scorecards to the OSSE website (annually, starting Fall 2014)

(B) Build Pipelines of Effective and Highly Effective Teachers

- Issue RFP according to specifications in grant (Winter 2011)
- Hold a competitive grant process (two rounds, Spring 2011, Spring 2012)
- Award grants (two rounds, Summer 2011, Summer 2012)

Section D5: Providing Effective Support to Teachers & Principals

(B) Support Charter LEA Professional Development Solutions Tied to Evaluations

- Review LEA plans and provide technical assistance (Summer 2012)

(C) Launch Professional Learning Communities for Effectiveness (PLaCEs)

- Work with Human Capital Task Force to determine the parameters of an RFP that effectively captures the collaboration needs for statewide reform (based in part on successful OSSE Dissemination Grants currently underway): Spring 2010, Human Capital Task Force
- Issue RFP (Spring 2010)
- Award grants (three rounds: Summer 2010, Spring 2011, Spring 2012)
- Discuss with Human Capital Task Force best practices for how OSSE can effectively oversee and administer the PLaCEs (Summer 2010, ongoing, Human Capital Task Force)
- Review results from PLaCEs clusters (Spring 2014, Human Capital Task Force & OSSE)

(D) Develop PD Tracking Capabilities in the Individualized PD Platform

- Compile PD effectiveness data stripped of personal identifiers and make available to researchers (Spring 2013)

Section E2: Turning Around Lowest-Achieving Schools

(A) Identify and Plan for the Turnaround of Persistently Lowest-Achieving Schools

- Finalize list of schools to turn around based on current definition and 2009 data, including at least the ten schools identified above (Anacostia Senior High School, Eastern Senior High School, Luke C. Moore Academy, Options Public Charter School, Spingarn Senior High School, Kenilworth Elementary School, Browne Junior High School Education Campus, Dunbar Senior High School, Prospect Learning Center, and the Hamilton Center) and others within the bottom 20% to be determined (Spring 2010, OSSE, DCPS, and PCSB)
- Examine ranking of schools and eliminate (1) any schools for which an adequate intervention has occurred in the past two years and (2) any schools that may have been flagged due to enrollment of special populations but are deemed to be performing effectively (Spring 2010, OSSE, with DCPS or PCSB as relevant)
- Publish list of schools slated for turnaround (Summer 2010, OSSE)

- Revisit the adequacy and appropriateness of the definition of persistently lowest achieving schools, identifying the truly persistently lowest-achieving schools on an annual basis, engaging DC school-quality thought leaders in the process (Fall 2010, ongoing, OSSE, DCPS, PCSB)
- Establish a detailed turnaround plan and timeline for each school listed above that is slated for turnaround (beginning Spring 2010, with final plans for above listed schools being announced by January 2012, OSSE/DCPS and OSSE/PCSB)
- Plan for additional turnarounds for schools on the OSSE-reported "persistently lowest achieving schools list" as generated annually with new student achievement data (beginning Fall 2011 and annually, OSSE/DCPS and OSSE/PCSB)

(B) Provide Preparation Support for Potential Turnaround Teams

- Fund planning years for administrative teams who will take on the turnaround of a school in the following school year (Fall 2010 and ongoing for life of grant)

(C) Align School Modernization Efforts to Support School Turnaround

- Facilitate quarterly discussions between the Mayor's Office responsible for the Facilities Modernization Plan and the DCPS team responsible for planning and executing turnarounds (Summer 2010 & quarterly, for life of grant and beyond)

(E) Ensure Capacity for Strong Management of Turnaround Partnerships

- Review DCPS Plan for OSI Expansion (Summer 2010)

Priority 2: STEM Education

(A) Develop DC STEM Learning Network

- Work with national partner to develop and implement a DC STEM Learning Network and Coordinating Council in collaboration with LEAs. Identify immediate priorities for workplan, including mapping of student pathways and private/external regional and national partners. (beginning Summer 2010, OSSE, LEAs)

DC Race to the Top: LEA Implementation To-Do List

(Implementation activities outlined below include only those to be carried about by LEAs. Activities to be carried out by OSSE are included in the OSSE Implementation To-Do List)

Section B3: Supporting the Transition to Enhanced Standards and High-Quality Assessments

(A) Implement a Fast, Aggressive Rollout Plan for Common Core Standards

- Sign contract with vendor: LEAs may also write their own interim assessments (Winter-Spring 2010)
- Implement interim assessments (School Year 2011-2012, ongoing every 6-8 weeks)

(B) Create, Organize, and Fund a New Standards Working Group

- Participate in Common Core Standards Working Group meetings: voluntary (Fall 2010-Summer 2011)
- Conduct information sessions with parents and other community members (Summer 2011, ongoing)
- Provide school-level professional development on Common Core Standards (Summer 2011, ongoing for the life of the grant)

Section C3: Use Data to Improve Instruction

(A) Develop Instructional Improvement Systems Aligned to Data Systems

- Identify, with external partners and OSSE, current LEA capacities and needs with regard to instructional improvement systems (Summer 2010)
- Submit a plan for using funds to adopt or expand an instructional improvement system (Fall 2010)
- Sign a contract with an OSSE-approved vendor; LEAs may also design their own systems (Spring 2011)
- Implement new or improved instructional improvement system (Fall 2012)

(B) Support Participating LEAs in Providing Effective Professional Development on Data-Driven Instruction

- LEAs will receive formulas funding for one of the following (Fall 2011, ongoing):
  - i. Plan to hire a school-based Instructional Data Analyst/Coach
  - ii. Plan to train and offer stipends to data leads in schools
  - iii. Plan for ongoing, job-embedded professional development on data-driven instruction (if the LEA already has a resident data analyst/coach)
- Submit best practices/collaborate on uses of data-driven instruction to Individualized PD Platform (Summer 2013, ongoing)
- Provide teachers with regular planning time for using data to inform instruction (Fall 2011, ongoing)

Section D2: Improving Teacher & Principal Effectiveness Based on Performance

(A) Ensure That All LEAs Have Access to Student Growth Data for Tested Grades

- Participate in a Student Growth Measure Task Force to determine the statewide growth measure and draft a concrete plan (selected LEAs, Summer 2010)
- Build relevant data systems (LEAs on the Student Growth Measure Task Force, Fall 2010-Spring 2011)
- Use the student growth measure for DC-CAS tested grades and subjects for educator evaluations (Summer 2011 and ongoing)

(B) Expand Value-Added Growth Measure to Additional Grades/Subjects

- Develop priority list of grade and content areas for expanded coverage and develop specifications for assessments that may be used to identify growth measures that are appropriate for the purposes of teacher evaluation (Summer 2010, LEAs on Student Growth Measure Task Force, convened by OSSE)
- Identify growth assessments that cover priority grades and content areas according to OSSE specifications to use for a two-year trial for informing evaluations (Fall 2010)
- Based on the two-year trial, confirm the menu of assessments appropriate for measuring priority non-tested grades and subjects (Summer 2012, LEAs on Student Growth Measure Task Force, convened by OSSE)
- Adopt new assessments aligned with evaluations (Fall 2012)
- Devise other methods for expanding the grades and subject areas for which a growth measure may be calculated. Measures of student achievement must be statistically rigorous and comparable across classrooms (Fall 2012 - Fall 2013)
- Share best practices among LEAs related to expanding the growth measure across grades and subject areas and using new assessments for the purposes of teacher evaluation (Fall 2012 and ongoing, LEAs on Student Growth Measure Task Force, convened by OSSE)

(C) Develop a Robust Teacher and Principal Evaluation System

Based on the below requirements published by OSSE:

Teacher evaluation requirements: student growth counts for at least 50% of a teacher's evaluation, includes multiple measures for performance, divides effectiveness into four (4) tiers (e.g., highly effective, effective, minimally effective, ineffective), is conducted annually, and is used to inform human capital decisions.

Principal evaluation requirements: student outcomes metrics account for a significant proportion of a principal's evaluation (e.g., student growth, student performance); multiple qualitative measures are included (e.g., parent and staff surveys); school-specific goals will be included; effectiveness is divided into tiers (e.g., highly effective, effective, minimally effective, ineffective), is conducted annually, and is used to inform human capital decisions.

DCPS:

- Expand and refine the IMPACT human capital management system, which meets the above requirements for teachers
  - i. Submit a plan to OSSE for using RTTT funds to expand and refine IMPACT to inform and support human capital decisions (Summer 2010)
  - ii. Involve teachers and principals in the refinement of IMPACT (Summer 2010)

- Submit a plan to OSSE for how DCPS will do the following: (Summer 2010)
    i. Refine a principal evaluation system based on planned school scorecards that also meets the requirements for principal evaluation articulated above
    ii. Engage principals in the design of this refined system
    iii. Implement these evaluations such that they are used to provide teachers and principals with timely and constructive feedback, such as data on student growth for their students, classes, and schools

Charter LEAs:

- Submit plans to OSSE for how the LEA will do the following: (Summer 2010)
    i. Engage in multi-LEA or multi-school consortia to build new or align current evaluation systems with the requirements for teacher and principal evaluation systems
    ii. Engage teachers and principals in the development of these new systems
    iii. Incorporate student growth measures into these evaluations when they become available to charter LEAs in Summer 2011
    iv. Implement these evaluations such that they are used to provide teachers and principals with timely and constructive feedback, such as data on student growth for their students, classes, and schools

- In addition to the LEA-specific activities listed above, LEAs will be expected – through the Human Capital Task Force (convened by OSSE) – to leverage lessons from DCPS and charter LEAs in developing human capital evaluation systems (Fall 2010, ongoing)

(D) Use Evaluations to Make Human Capital Decisions (Refer to Application Table D2.1)

(E) Collaborate Across Sectors to Support Best Practices in Human Capital

- Participate in a Human Capital Task Force (selected LEAs, Spring 2010)
- Engage in brainstorming and problem-solving discussions about the implementation of the RTTT initiatives and other statewide human capital initiatives (Spring 2010, ongoing, LEAs on the Human Capital Task Force)

Section D(3): Ensuring Equitable Distribution of Effective Teachers & Principals

(A) Improve Process for Analyzing Equitable Distribution of Effectiveness

- Build capacity into evaluation systems outlined in D2 to sort effectiveness of teachers within schools (Fall 2011)
- Submit percentages of effective and highly effective teachers and administrators by school to OSSE (annually, starting Summer 2012)
- Submit a plan to increase teacher effectiveness in the 25% of schools where high-poverty and low-effectiveness are most highly correlated (annually, starting Fall 2012)

(B) Engage in "Smart Targeting"

- Engage in recruitment, selection, and retention strategies to increase the effectiveness of teachers in high-need schools (Spring 2010, ongoing). Examples include:

- **Recruitment.** Offering small-scale recruitment fairs where pre-screened talent is routed directly to principals of persistently low-performing and low-performing schools
- **Selection.** Supporting principals in low-performing schools in implementing rigorous screening processes for new candidates
- **Retention.** Offering end-of-year bonuses for highly effective teachers in high-needs schools (as is planned in pending WTU contract)

(C) Improve Process for Analyzing Effectiveness of Teachers in Hard-to-Staff Areas

- Build capacity into evaluation systems outlined in D2 to sort effectiveness of teachers by content area (Fall 2011)
- Submit to OSSE a list of content areas identified as high-need (annually, starting Fall 2011)
- Submit to OSSE percentages of effective and highly effective teachers by content area (annually, starting Summer 2012)
- Require LEAs that show disproportionate ineffectiveness of teachers in hard-to-staff content areas to submit a plan to increase teacher effectiveness in the bottom five "high-needs" content areas (annually, starting Fall 2012)

Section D4: Improving the Effectiveness of Teacher & Principal Preparation Programs

(A) Evaluate Preparatory Programs (e.g., alternative certification and IHE) Based on Effectiveness

- Submit required effectiveness information to OSSE, such that effectiveness data can be linked to graduates (annually, starting Summer 2012)

(B) Build Pipelines of Effective and Highly Effective Teachers

- Submit proposal for teacher pipeline funding (Summer 2010 or Winter 2011)
- Launch charter LEA-sponsored programs (two rounds, Summer 2010 and Summer 2011)

RTTT Section D5: Providing Effective Support to Teachers & Principals

(A) Launch Individualized PD Platform (DCPS)

- Phase I: Build interface and connect IMPACT data to Individualized PD Platform (Winter 2010-2011, vendor under DCPS)
- Phase II: Develop/acquire content, such as video exemplars of effective practice (Spring 2011, vendor under DCPS)
- Phase III: Provide charter schools with access to the system; add external PD providers such as online courses and higher level content so effective teachers go from "good to great" (Spring 2012, vendor under DCPS)

(B) Support Charter Development of Local PD Management Systems (Charter LEAs)

- Submit plans to OSSE for developing or purchasing professional development systems or strategies that address and will continue to address teacher and administrator needs based on evaluations. These may including coaching, induction, common planning, and collaboration time that is ongoing and job-embedded (Spring 2012, participating Charter LEAs)

(C) Launch Learning Communities for Effectiveness (PLaCEs)

- Work with OSSE to determine the parameters of an RFP that effectively captures the collaboration needs for reform in the district (Spring 2010, LEAs on the Human Capital Task Force)
- Apply for grant funding (Spring 2010, Winter 2011, Winter 2012, LEA collaboratives)
- Implement Plans (Fall 2010, ongoing, by PLaCEs)
- Provide guidance to OSSE on how to effectively oversee and administer the PLaCEs (Summer 2010, ongoing, LEAs on the Human Capital Task Force)
- Review results from PLaCEs clusters (Spring 2014, Human Capital Task Force & OSSE)

(D) Develop PD Tracking Capabilities in the Individualized PD Platform

- Design a process for tracking and analyzing the effectiveness of online and offline PD experiences in the Individualized PD Platform (Fall 2010-Spring 2012, vendor under DCPS)

RTTT Section E2: Turning Around Lowest-Achieving Schools

(A) Identify and Plan for the Turnaround of Persistently Lowest-Achieving Schools

- Finalize list of schools to turn around based on current definition and 2009 data, including at least the ten schools identified above (Anacostia Senior High School, Eastern Senior High School, Luke C. Moore Academy, Options Public Charter School, Spingarn Senior High School, Kenilworth Elementary School, Browne Junior High School Education Campus, Dunbar Senior High School, Prospect Learning Center, and the Hamilton Center) and others within the bottom 20% to be determined (Spring 2010, OSSE, DCPS, and PCSB)
- Examine ranking of schools and eliminate (1) any schools for which an adequate intervention has occurred in the past two years and (2) any schools that may have been flagged due to the special populations they serve but that are performing effectively (Spring 2010, OSSE, with DCPS or PCSB, as relevant)
- Revisit the adequacy and appropriateness of the definition outlined above for identifying the truly persistently lowest-achieving schools in the state on an annual basis (Fall 2010, ongoing, OSSE, DCPS, PCSB)
- Establish a detailed turnaround plan and timeline for each school listed above that is slated for turnaround (beginning Spring 2010, with final plans for above listed schools being announced by January 2012, OSSE/DCPS and OSSE/PCSB)
- Plan for additional turnarounds for schools on the OSSE-reported "persistently lowest achieving schools list" as generated annually with new student achievement data (Fall 2011 and annually, OSSE/DCPS and OSSE/PCSB)

(B) Provide Preparation Support for Potential Turnaround Teams (DCPS)

- Establish new organizational chart and job responsibilities for the Office of Human Capital (Spring 2010, DCPS)
- Submit these, along with a sustainability plan for timeline beyond the life of the RTTT grant, to OSSE (Summer 2010, DCPS)
- Hire new team members (Summer/Fall 2010)

- Upon identification of schools for turnaround, decide which schools will be turned around in which of the next three years and assemble administrative teams to take on the turnarounds (Fall 2010, ongoing, DCPS Office of School Innovation and Office of Human Capital)

(C) Align School Modernization Efforts to Support School Turnaround (DCPS)

- Participate in discussions with the Mayor's Office responsible for the Facilities Modernization Plan to align plans for modernization with plans for turnaround (Summer 2010, quarterly for life of grant and beyond)

(D) Provide Differential Funding for Turnaround Schools (DCPS)

- Develop a plan for use of differential funding for each school in turnaround (for turnarounds beginning the following Fall): Spring of each year, DCPS
- Provide differential funding for turnaround schools based on number of students served (Fall of each year, DCPS)

(E) Ensure capacity for strong management of Turnaround Partnerships (DCPS)

- Establish new organization chart and job responsibilities for Office of School Innovation (Spring 2010, DCPS)
- Submit these, along with sustainability plan for timeline beyond the life of the RTTT grant, to OSSE (Summer 2010, DCPS)
- Hire new team members (Summer/Fall 2010, DCPS)

Appendix A2.3

Budget Summary

APPENDIX A2.3-- Budget Part I: Budget Summary Table

Instructions:
In the Budget Summary Table, the State should include the budget totals for each budget category and each year of the grant. These line items are derived by adding together the line items from each of the Project-Level Budget Tables.

Budget Part I: Summary Budget Table
(Evidence for selection criterion (A)(2)(i)(d))

Budget Categories	Project Year 1	Project Year 2	Project Year 3	Project Year 4	Total
1. Personnel	$637,000	$637,000	$637,000	$637,000	$2,548,000
2. Fringe Benefits	$114,675	$114,675	$114,675	$114,675	$458,700
3. Travel					
4. Equipment	$610,000				$610,000
5. Supplies					
6. Contractual	$3,160,000	$1,800,000	$1,375,000	$1,375,000	$7,710,000
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)	$4,521,675	$2,551,675	$2,126,675	$2,126,675	$11,326,700
10. Indirect Costs*					
11.Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs	$2,500,000	$5,395,300	$6,425,300	$6,952,700	$21,273,300
13. Total Costs (lines 9-12)	$7,021,675	$7,946,975	$8,551,975	$9,079,375	$32,600,000
14. Funding Subgranted to Participating LEAs (50% of Total Grant)	**$12,275,000**	**$10,375,000**	**$10,375,000**	**$9,375,000**	**$42,400,000**
15. Total Budget (lines 13-14)	$19,296,675	$18,321,975	$18,926,975	$18,454,375	$75,000,000

All applicants must provide a break-down by the applicable budget categories shown in lines 1-15.
Columns (a) through (d): For each project year for which funding is requested, show the total amount requested for each applicable budget category.
Column (e): Show the total amount requested for all project years.
*If you plan to request reimbursement for indirect costs, complete the Indirect Cost Information form at the end of this Budget section. Note that indirect costs are not allocated to lines 11-12.

BUDGET PART I: BUDGET SUMMARY NARRATIVE

Instructions:
Describe, in an Appendix, the overall structure of the State's budget for a Race to the Top grant, including the list of projects for which there is a project-level budget, and a rationale for how these will be organized and managed.

The State should also describe how other Federal (*e.g.* School Improvement Grant, Statewide Longitudinal Data Systems grant, Teacher Incentive Fund grant, Title I), State, and local funds will be leveraged to further support Race to the Top education reform plans.

The State must include, on Line 14 of the Budget Summary Table, the amount of funding to be subgranted to its participating LEAs based on their relative shares of funding under Part A of Title I of the ESEA for the most recent year (that is, FY 2009), as required under section 14006(c) of the ARRA. States are not required to provide budgets for how the participating LEAs would use their funds. However, the Department expects that, as part of the administration and oversight of the grant, States will monitor and track all expenditures to ensure that participating LEAs spend these funds in accordance with the State's plan and the scope of work described in the agreement between the State and the participating LEA.

Overview

The budget outlined above captures the funding structure for how the District of Columbia intends to accelerate its strategy to turnaround DC's lowest-achieving schools, improve the effectiveness of teachers and leaders and of all schools, and expand the reach of high-achieving schools through use of Race to the Top funds. The overall budget fits within the $75 million cap established by US Department of Education (US ED) parameters. The amount for DC is justified by three factors:

1) The pace and breadth of reform in the District is greater than that of most other states – DC is reform-rich in that every LEA is engaged in reform at some level, and LEA participation in Race to the Top covers 91% of public school students in the District. Thus, the District is primed for an infusion of investment such as Race to the Top, and US ED will be able to measure reform implementation and results faster and with greater impact than other states with similar population sizes.

2) In DC, the overall proportion of high-need schools is still dramatically high, with both DCPS and the PCSB indicating that nearly half of their schools need strong support to reach baseline levels of effectiveness. In addition, DC believes that the $75MM outlined in its RTTT application will go "further, faster" in this small state, more so than in any other state.

3) Finally, a minimum level of baseline funding is required to ensure that system-wide reform can occur at scale.

DC's strong track record of innovation that occurs at the LEA level allows for much of its proposed RTTT funding – 85% – to be directed to LEAs either by formula sub-grant or specific supplemental funding programs. Although the application does not require budgets that specify how participating LEAs will use RTTT funds,

DC's level of deep LEA engagement throughout the application process has allowed for the provision of detail (herein) about how sub-granted LEA funds will be used.

Uses of Sub-Granted Funds

As a state where major change has been driven by LEAs, nearly 57% of the DC budget is comprised of funding that will be sub-granted directly to LEAs. This will ensure that LEAs have the necessary resources to implement initiatives in support of RTTT's four Assurances. In particular, LEAs plan to use the funds for five specific initiatives, outlined below:

Subgranted Fund Priorities	Year 1	Year 2	Year 3	Year 4	TOTAL
Evaluation Systems	$7,500,000	$7,500,000	$7,500,000	$7,500,000	$30,000,000
Professional Development Systems	$1,250,000	$1,250,000	$1,250,000	$1,250,000	$5,000,000
Interim Assessments	$1,000,000	$1,000,000	$1,000,000		$3,000,000
Data Professional Development	$625,000	$625,000	$625,000	$625,000	$2,500,000
Standards Professional Development	$1,900,000				$1,900,000
Total	**$12,275,000**	**$10,375,000**	**$10,375,000**	**$9,375,000**	**$42,400,000**

(1) Building out Human Capital Evaluation Systems, $30MM. Participating LEAs will use $30MM over four years to build or improve upon evaluation systems that enable them to make important decisions about teacher and principal training, retention, promotion, and compensation. Within two years, DC's aim is to ensure that all participating LEAs have evaluation systems that match the specifications outlined in the application.

For DCPS, this funding will be deployed to launch versions 2.0 and 3.0 of IMPACT, the revolutionary new human capital management system used to connect information about student growth to teacher evaluations. In particular, DCPS needs funding to ensure that data being generated by the evaluation system are processed in a timely manner, so that interventions in teacher practice can happen in real-time. Funding is also required to train Master Educators on effective coaching strategies so that the evaluation is tied to a system of continuous learning for teachers. Finally, IMPACT requires new functionality, including the ability to sort effectiveness data by school and content area, so that it can report on the distribution of effective teachers by school and content area.

IMPACT Expansion Costs	Year 1	Year 2	Year 3	Year 4
Operations & Infrastructure				
Personnel	$385,250	$385,250	$385,250	$385,250
Non-Personnel	$10,000	$10,000	$10,000	$10,000
TOTAL	$395,250	$395,250	$395,250	$395,250
Master Educator Program				
Personnel	$4,157,250	$6,261,750	$6,261,750	$6,261,750
Non-Personnel	$ 173,900	$219,900	$219,900	$219,900
TOTAL	$4,331,150	$6,481,650	$6,481,650	$6,481,650
Data Analysis & Research				
Personnel	$143,750	$143,750	$143,750	$143,750
Non-Personnel	$264,000	$124,000	$ 124,000	$124,000
TOTAL	$407,750	$267,750	$267,750	$267,750
Ongoing Design				
Personnel	$310,500	$310,500	$310,500	$310,500
Non-Personnel	$1,133,000	$833,000	$733,000	$733,000
TOTAL	$1,443,500	$1,143,500	$1,043,500	$1,043,500
ANNUAL TOTAL	**$6,577,650**	**$8,288,150**	**$8,188,150**	**$8,188,150**
PROJECT TOTAL				**31,242,100**

Although DCPS will not receive the full cost of the IMPACT expansion– as the $30MM for human capital evaluation systems will be split proportionally between DCPS and charter LEAs through the sub-grant process – RTTT funding will enable DCPS to accelerate deeper reform via IMPACT ("further, faster") by funding key components, especially important one-time costs such as infrastructure and early data analysis. In addition, DCPS will develop a sustainability plan for IMPACT, particularly for personnel who are initially funded with RTTT. The district has committed to the strategic deployment of resources and will look to rely primarily on alternative funding sources for line-items that require long-term sustainability (e.g., Master Educators).

The proportional amount of this $30MM for charter LEAS is approximately 29% or $8.7MM, and will be used to create human capital evaluation systems that align with the requirements outlined in D2. Although charters may deploy the funds as they deem appropriate – either to build new systems or to improving preexisting systems – charters may also opt to leverage economies of scale by pooling funds and hiring an external party to design an evaluation system that can be used across multiple LEAs.

Finally, this particular funding stream also contains many no-cost elements, such as the creation of a Human Capital Task force to support the transfer of knowledge related to building evaluation systems across sectors. This pooled knowledge will be leveraged to ensure that funds are being deployed strategically in pursuit of RTTT goals. It reflects a positive outgrowth of the collaborative RTTT planning process, as well as an ongoing commitment to harness DC's diverse reform agenda across multiple LEAs.

(2) Building Professional Development Systems Aligned to Evaluations, $5MM. DC's current investments in identifying areas of teacher effectiveness through evaluation leads to a logical next step of creating a platform for linking this information to professional development solutions. The "Individualized PD Platform" (outlined in section D5) will be designed to serve this precise function. Though it is a DCPS-conceived idea, LEAs across sectors will collaborate on streaming new, high-quality content onto the platform for use by teachers in increasing their effectiveness.

Phase I of this project has been funded by a national foundation, but DCPS proposes to use RTTT funds to take plans for this system to the next level and incorporate new content that will allow teachers to focus on improvements in individually identified areas of need. Initial work with the national foundation led DCPS to create a multi-year strategic plan for this project for which cost estimates were generated. Participating charter LEAs will be able to use sub-grant components of the $5MM funding stream to build their own systems for aligning professional development to evaluations and match solutions to teacher needs, according to OSSE-specified criteria. In the spirit of collaboration achieved through the DC RTTT application process, charter schools will be encouraged to pool resources together to develop joint systems and will also have access to the DCPS Individualized PD Platform content, for use in their individual LEAs.

(3) Interim Assessments, $3MM. LEAs across DC agree that a transition to new standards and new summative assessments is best maximized by equipping schools with interim assessments that measures student performance vis-à-vis the year-end summative test. RTTT funding will support the expansion of interim assessment use for the first three years. Based on discussions with current test-makers and analyzing the costs of current interim assessments, LEAs should be able to purchase interim assessments in Math/ELA for $25 - $30 a student. LEAs are to provide interim assessments in grades 3-10, with the option of expanding to other grades with remaining funding. In addition, they are encouraged to contract with high-quality interim assessment providers who are able to offer professional development support around the interim assessments to encourage data-driven instruction. Discussions with principals and interim assessment providers revealed that $25 is more than sufficient for created interim assessments; however the creation of new assessments aligned to the Common Core standards will add additional fixed costs. OSSE believes these fixed costs will foster collaboration among LEAs: to save money, LEAs may be enticed to partner together, and evidence that this is already occurring is apparent through multi-LEA partnerships with organizations like Achievement Network, which provides interim assessments and professional development around using data to drive instruction. Additionally, LEAs that create their own assessments will have a financial incentive to share them.

(4) School-level Data Professional Development, $2.5MM. This funding amounts to approximately $625K a year across all LEAs and can be deployed as schools and LEAs deem appropriate in support of the objective: to equip teachers with capacity to make instructional decisions based on data. DCPS, for instance, is likely to use that money for a stipend for a "data lead"—an educator with strong experience using data and capacity for training others—within the school building. Charter schools may choose to do the same, or they may collaborate across schools to support the salary of a data analyst or consultant who can train school-level staff on how to efficiently and effectively generate and use data for instruction. Given the funding amount, the number of participating LEAs, and the varying levels of existing school-level data capacity, this is purposely insufficient funding for a full-time position for every school; any school receiving a full salary would have had difficulty continuing to fund the position after four years. Rather OSSE's goal is for every school, at a minimum, to free up a teacher or staff member's schedule to begin crafting a long-term, school-wide data

analysis strategy and to collaborate with other LEAs on shared, best-practice driven PD. A coherent, focused strategy for using data to improve instruction will have a large impact on a school, long after 2013.

(5) Common Core Standards Professional Development and Communication, $1.9MM. In recognition of the time and energy it will take at the LEA level to embed new standards into ongoing teacher practice, LEAs will use this funding to equip their teachers with the information they need to make the standards translate into practical classroom use. LEAs will leverage centrally-created materials from OSSE. RTTT funding may be used to pay teachers and instructional leads to align curricula to the new standards as well as professional development workshops on standards using exemplars of student work. This funding is also to be used to share expectations around new standards with students and their families, recognizing that the standards will have the highest impact when they raise the bar and deepen understanding of expectations for student work. OSSE decided to fund LEAs directly because of the important differences between different school communities. Some schools may find that reaching out to parents via meetings is simple and effective, while others may choose to communicate via e-mail. Some LEAs may choose additional teacher professional development over printing costs. Other schools may decide that the only way to reach out to families is by sending information home with students. LEAs will be able to make the decisions that are best for their communities.

Supplemental Funding for Participating LEAs

Beyond the above initiatives, which will be financed by LEAs out of the discretionary sub-granted funds, DC has identified five initiatives that are specific to one LEA or one set of LEAs. The diverse nature of the DC landscape – with DCPS and a large number of small charter LEAs – means that strengths and gaps vary from one sector or another. To ensure that all LEAs are equipped to support RTTT goals, DC has prioritized the following five initiatives. Project details for each initiative follow in the RTTT application appendix.

(1) Charters: Instructional Improvement Systems, $5MM. The effective use of data to drive instruction requires LEAs to have student-level data management systems that can be easily manipulated to generate information to help improve instruction. While DCPS already has in place a functioning structure to support such activities, many charter LEAs do not have the same back-office infrastructure and data-system support. Therefore, OSSE will run a competitive grant process for LEA funding to either build instructional improvement systems or improve preexisting systems. LEAs without an instructional improvement system may submit a plan to develop a system that would allow data to be viewed at the student, classroom, grade, and school levels so that teachers, administrators, and support staff could view the relevant information needed to make critical decisions related to instructional improvement decisions and strategies. LEAs with adequate preexisting systems will be able to submit plans to integrate such systems with the new common standards or to improve the analytical functionality, quality and depth of preexisting systems. The purpose of using competitive grants is not to eliminate LEAs, but rather to ensure that only projects that meet baseline criteria and align with state reform priorities are funded. With 34 charter LEAs participating in this grant, if each chooses to submit an application and all applications are accepted, an average of $142,944 per LEA would be available for this technology.

(2) Expanded Student Growth Assessments, $2MM. Although DC has made significant strides in linking student growth results from the DC-CAS to teacher evaluations, the simple fact remains that over 80% of teachers are not covered by DC-CAS grades. As a result, additional work is required in order for evaluations of a broader base of teachers to truly be linked to student performance. DC is therefore providing funding to LEAs to develop or pilot assessments that will demonstrate student growth in non-tested grades (particularly early

elementary and high school grades) and may be useful for future teacher evaluations. Such funding provides substantial resources to LEAs for piloting a variety of assessments, and likewise will support the creation of a collaborative structure and process through which LEAs can share knowledge (e.g., about the assessments' utility for evaluation purposes and for selecting the best options for inclusion in evaluations after a two-year pilot period). DC's specific goal through RTTT funding is to ensure that a substantially higher number of teachers will be evaluated based on contributions to student growth.

(3) Charter LEAs: Teacher Pipelines, $5MM. DC recognizes the critical importance of effective teachers to ensuring the success of all students. In addition to managing performance of current teachers, DC intends to support charter LEAs in creating pipelines of effective and highly effective teachers, either by developing in-house training programs or by partnering with outside organizations. This funding will flow to LEAs via competitive grants. Priority will be given to applicant groups that include programs or schools that have a track record of producing effective teachers. Priority will also be given to programs that focus on hard-to-staff content areas. It is estimated that this program will bring in several hundred new, highly effective teachers to DC schools over four years.

(4) DCPS & Charter LEAs: Professional Learning Communities of Effectiveness (PLaCEs), $3MM. The desire to collaborate across DC's diverse and innovative education sectors and to share best practices is one of DC's greatest strengths. Moreover, the presence of both high- and low-achieving schools serving similar student populations within a compact geography creates an opportunity to disseminate best practices and ensure that schools, their teachers, and their administrators learn from one another. This money will be used to fund a competitive grant process for establishing collaborative groups of schools that will be organized around key reform themes or areas of need, such as STEM education, special education, or early childhood development. Funding will pay for release time for staff and school leaders to participate in the cross-school collaboration, stipends for in-school staff who play mentoring roles, and professional development and supplies needed to ensure successful collaboration.

(5) DCPS: School Turnarounds, $6.3MM. It is the position of the District of Columbia that any charter school that falls within the persistently lowest-achieving 5% of schools (as identified and articulated in Section E2) should be moved to closure through the PCSB Performance Management Framework. Thus, the funding required for executing one of the four specified turnaround models will be directed only to DCPS, where other initiatives besides closure may be appropriate. DCPS' turnaround strategies will center around three initiatives: (1) increasing capacity at the Office of School Innovation, (2) funding "Prep Years" for turnaround teams, and (3) allocating an additional per-student dollar amount for turnaround schools in their first four years of turnaround. This funding stream is considered in concert with School Improvement Grants, as explained later in this Summary.

State-Level Projects

Considering that the above projects constitute 85% of DC's proposed budget, the line items captured on the first page of this summary (lines 1-10), which account only for state-level projects, are not significant in financial scope. This is in large part because of the District's philosophy that LEA innovation will remain a key reform driver, and will be energized by the opportunities presented by RTTT projects made possible by sub-granted or supplemental funding to LEAs. Still, DC's RTTT plan includes six important state-level components. Project details for each component are included in the Project Budget Summaries, Appendix A2.4.

(1) Statewide Growth Measure, $2.5MM. Although DC has a significant amount of raw data on student achievement through DC-CAS scores, there is currently no system for charter LEAs to track student growth against a comparison set of students and to determine teacher contribution to such growth. While the IMPACT system has a formula for calculating student growth, as well as a system in which to house such data, there remains a need for a system that aggregates such information for charter LEAs and allows for growth calculations. DC's efforts to achieve this goal will require OSSE to contract with a vendor that will aggregate and process data for use in evaluation purposes.

(2) Standards Materials, $500K. Ensuring a successful transition to new standards is of critical importance for DC, which has historically maintained a strong commitment to high standards. As the District transitions to new standards, DC plans to seize the opportunity to make standards accessible and ensure that teachers, students, and parents understand the full relevance of such standards. DC will team up with its fellow Common Core states to leverage common resources and materials first to bridge the gap between old and new standards, such that teachers can best understand how to change instructional practices accordingly. OSSE will contract with a web designer to develop and launch an interactive website that will feature the new core standards and provide a one-stop source for materials and information about the common core standards within DC's specific educational context. This will include, for example, exemplars of student work in areas where the standard may be unclear. Documents contained on the website will also include parent-friendly explanations of standards in multiple languages.

(3) Standards Entry-Points for Differentiated Learning, $400K. An important priority for DC in the Race to the Top application and beyond is ensuring that students with diverse learning profiles and special needs are able to access rigorous content. As DC transitions to a new set of standards, it is important to all stakeholders that all students have access to these standards. In pursuit of this goal, DC has already initiated conversations with other states to develop a document that will scaffold entry-points for students of all levels into the new standards. DC also intends to enter into cross-state collaboration in order build upon preexisting experience in the creation of this entry-point guidance document. A key function of this document will be to ensure that DC teachers who serve students at all levels are able to differentiate instruction shortly after the new standards are released. This tool will also be used for LEA-level training. Additionally, DC plans to increase the functionality of SEDS, the special education data system, so that teachers can reference standards using a dropdown function when writing IEPs.

(4) Improved Online Data about Schools, $250K. DC recognizes the importance of providing accessible and easy to manipulate information about schools to parents, families and community members. OSSE will contract with a vendor to create a more user-friendly website from which users will be able to download aggregate-level spreadsheets on data that will include statistics on truancy, graduation, attendance, and AYP status. The website will add additional school-level data, such as information on Highly Qualified Teachers, SAT and NAEP scores. The website will also allow OSSE to track what types of data users are downloading, as means of informing statewide research priorities and improving OSSE's research-ready data sets.

(5) Statewide Research: Data Sets, Online Request System, $435K. DC recognizes a need to take greater advantage of a broad level of research interest in DC's many reform initiatives. Specifically, DC can play a more important role in the generation of information that could further catalyze reforms through research-based efforts. To this point, streamlining access for researchers is an important DC RTTT initiative. OSSE will identify and create a portfolio of research-ready data sets, including assessment, enrollment, teacher and

financial data. OSSE will provide all state-level data stripped of personal identifiers in a simple, downloadable data format. This will allow local groups and researchers to provide better analysis of educational processes more quickly and more comprehensively than with currently available data. OSSE will also develop an online research request tool that allows researchers or outside organizations to easily apply for access to the portfolio of data sets. OSSE will publish a list of research priorities for DC and encourage submission of research findings related to these priorities. OSSE will provide requested data from local instructional improvement and longitudinal data systems to ensure research is supporting the evaluation of the effectiveness of instructional materials, strategies, and approaches for educating different types of students.

(6) STEM Learning Network and Coordination Capacity Building, $125,000. As part of developing a STEM education framework, DC will partner with Battelle to develop a DC STEM Learning Network and coordinating body that will guide the state's execution of a statewide strategy. Once these structures are defined and detailed, OSSE will commit RTTT resources toward launching the DC STEM Learning Network. OSSE will also commit one of its Effectiveness Managers on the RTTT implementation office to working with LEAs on their STEM plans. Once up and running, OSSE envisions that the DC STEM Learning Network should be able to identify and cultivate additional resources from private sector partners to become self-sustaining beyond the first two years of the RTTT award.

Implementation and Management Approach

Much of what is included in the above summary budget that is not sub-granted funding or supplemental funding for Participating LEAs reflects funding that is required to ensure the effective implementation and management of DC's Race to the Top projects. Details of these funding requirements are aggregated into a project budget entitled "OSSE Implementation Capacity" (Appendix 2.4). Management of DC's Race to the Top projects will be overseen by a new Race to the Top office within OSSE, headed by a Project Director and staffed with 7 additional people whose responsibilities will include both implementation and program management activities. Implementation oversight will be performed by a Fiscal Manager, a Reporting and Implementation Manager, a Grant & Contract Analyst and a Research & Data Manager. This team will ensure that the state meets RTTT reporting requirements, that LEAs receive adequate support in meeting reporting requirements, and that states and LEAs coordinate with other funding sources (such as SIG, Title I, or other ARRA funds) to ensure that funding is being deployed most strategically. Three Effectiveness Managers will be responsible for the execution and oversight of the RTTT initiatives mentioned above. These individuals will work directly with LEAs on the various initiatives and grant programs, and will provide ongoing updates on LEAs progress towards RTTT goals and performance measures outlined in this application.

Integration with Other Sources of Funding

The DC RTTT funds are one important piece of a comprehensive set of funding streams. Ultimately, District leadership has considered these funding streams within the context of its overall reform agenda. This has allowed the DC RTTT team to determine which funding streams can make significant differences in catalyzing and deepening specific reform priorities, bringing about lasting improvements to system performance. DC is constantly seeking to position these various sources in strategic ways that will support a coherent reform agenda for student achievement. Examples of this approach include the following:

(5) School Improvement Grant (SIG). The DCPS turnaround project outlined earlier was developed as an enhancement designed to deepen the impact of the School Improvement Grant funding. DC envisions using

SIG funding to cover costs of the three priority projects in Years 1 through 3: (1) increased Capacity for the Office of School Improvement, (2) Prep Year Funding for Turnaround Teams, and (3) Differential Funding for Turnaround Schools. DC intends to apply for a waiver to "extend the period of availability of SIG funds until September 30, 2013," as the SIG notice of August 2009 requested, in order to ensure that funding can be strategically deployed over time. Race to the Top funds will be used to "top off" SIG funds each year and to fund costs in Year 4 so that, in combination, the two sources provide sufficient funding for an aggressive plan of intervention in the lowest-achieving schools. The table below outlines how this joint funding is intended to work together.

	Year 1	Year 2	Year 3	Year 4	Total
TOTAL	$3,130,200.00	$5,480,200.00	$5,010,200.00	$3,952,700.00	$17,573,300.00
SIG Funding	$3,130,200.00	$4,084,900.00	$4,084,900.00	-	$11,300,000.00
RTTT "Top Off"	-	**$1,395,300.00**	**$925,300.00**	**$3,952,700.00**	**$6,273,300.00**

Statewide Longitudinal Data Systems grant (SLDS). DC received funding through the 2007 SLDS grant, which it has used to make strides in building a statewide longitudinal data system. DC meets nine of the elements of COMPETEs, as detailed in Section C1. OSSE has plans to hire a new partner to help finish the project, overcoming earlier challenges with its initial SLDS contractor. While Race to the Top funding will not be used to complete the state's longitudinal data system, DC plans to continue to deploy SLDS funds and other state and local funds, as necessary, to continue building a statewide data system that will support the better use of student data throughout the state.

Teacher Incentive Fund grant (TIF). A TIF grant recipient since 2006, DC has used TIF funds to support rewarding teachers for their effectiveness in raising student achievement. Funds support the school district's Together Everyone Achieves More (TEAM) awards program, which represents a bold DCPS partnership with the Washington Teachers' Union and New Leaders for New Schools, a non-profit, education reform organization committed to strengthening public education.

TEAM offers DCPS school staff the opportunity to receive significant monetary awards and national recognition for helping students achieve dramatic academic gains. In addition to TIF, funding for TEAM is provided by DCPS and the generosity of private philanthropic funders. Since TEAM was launched in September 2007, 10 DCPS schools have won TEAM awards, over $1.5 million has been awarded, and over 400 individuals have received bonuses.

In addition to DCPS, a number of DC charters have received TIF funding through New Leaders for New Schools' Effective Practice Incentive Community (EPIC), an initiative in which principal and teacher incentive pay is linked to the sharing of effective practices. EPIC identifies schools with dramatic student achievement gains and provides school leaders in these schools with financial awards in exchange for sharing practices that have helped lead to such gains.

With the recently released parameters for the TIF grants, DC is well-positioned to make optimal use of these funds when they become available. DC's in-place systems and processes already shed light on teacher effectiveness and can inform measures used to apply TIF monies. Some options for DC's use of TIF funds

include intra-district transfer bonuses for effective or highly-effective teachers to work in turnaround schools, and funding of performance pay for effective and highly-effective teachers.

Investing in Innovation Funds (I3). DC is one of the nation's most innovative city-states, with a robust community of innovation-oriented LEAs – both charter and traditional – that operate in close partnership with many leading education non-profits, many of which are based in DC. As a state with a penchant for innovative ideas and a non-profit sector committed to increasing student achievement, conversations about I3 grants occurred throughout the Race to the Top application process. The projects included above reflect the careful prioritization of the DC team with I3 in mind, and align well with LEA I3 applications for supporting STEM and other school-level innovation projects, a dynamic professional development platform, and a cross-LEA teacher pipeline strategy. While I3 awards have not yet been announced, DC is confident that I3 applications will serve as a strong complement to what has been planned for in Race to the Top.

Title I. As a state with 65% of students living in poverty, DC must always make thoughtful use of Title I funds. Several Title I initiatives currently underway in DC are supported by Race to the Top initiatives outlined in this application. In particular – and given the additional ARRA funds available through Title I – many LEAs are implementing their own individualized reforms, as they have been encouraged to use Title I funds in ways that align with the core reforms associated with ARRA. Planned uses of Title I funds by LEAs include additional school turnaround and school improvement initiatives (such as DCPS' "Catalyst Schools" project and Friendship Public Charter School's investment in dedicated school improvement staff), secondary reading and mathematics interventions in selected schools, extended learning time programs, additional professional development (particularly in schools in improvement), supporting parental involvement activities, and expanding early childhood education programs.

Most Title I schools in DC operate school-wide programs, which allow for the use of Title I funds to upgrade their entire educational program. At the state level, funds reserved for administration will be used in part to fund activities within the statewide system of support; the persistently lowest-achieving schools and schools in restructuring will receive priority in the provision of resources and/or other support. In addition, funds allocated to schools in improvement, or under corrective action or restructuring through the state's required 4% 1003(a) reservation are being used to support both the development and implementation of school improvement strategies. With its funds reserved from the ARRA Title I allocation under Section 1003(a), the state is prioritizing funding LEAs that propose using the funds to perform thorough analyses of school needs, coupled with thoughtful strategic plans for future improvement activities (i.e., based upon those needs).

While all Participating LEAs that received Title I ARRA funding will use RTTT initiatives above to supplement their work to some extent, a detailed overview of how RTTT aligns with DCPS' plans for use of this funding provides a strong example of the level of coordination of the DC RTTT plan with LEA initiatives:

- *Innovation in Out-of-School Time, $4.6MM.* DCPS plans to use stimulus dollars to increase the amount of time its students spend on academics. DCPS is one of the only districts in the country with full-time afterschool coordinators across the system. More importantly, these coordinators are held accountable for bringing high quality afterschool programs to their schools and managing their performance. Coordinators work with Community Based Organizations on enrichment programs, manage the Academic Power Hour that occurs after the school day, and support the Saturday Scholars program, all of which add critical learning time to the school week. All these programs are made possible through

stimulus funds. As a result, funds for out-of-school-time were not included in the DC RTTT application, as it was clear that DCPS and other LEAs have other sources of funding for this work.

- *School Turnarounds for Failing Schools: Catalyst Schools Project, $2.9MM.* In 2009, DCPS Chancellor Rhee introduced the DC Catalyst Project as one of many initiatives designed to disseminate best practices throughout the city. After a rigorous application process, 13 schools from across DC were asked to participate in a transformation process, through which each school would adopt a school-wide theme program. Schools chose from among three themes – STEM, Arts Integration, and World Cultures – with the ultimate goal of ensuring a rigorous and relevant school for students. Through the joint leveraging of private and federal dollars with stimulus funds, DCPS will fund staff to support the development and implementation of DC Catalyst schools for one planning year and two operational years, after which schools will incorporate sustainability plans into individual school budgets. Related to RTTT, this funding will ensure that Catalyst schools, several of which are in the bottom 20% of schools as identified in this notice, also receive a turnaround intervention (RTTT Section E2).

- *Advancing Teaching and Learning: Professional Development and the Teaching and Learning Framework, $4.7MM.* DCPS has launched a new Teaching and Learning Framework that clearly articulates what excellence in the classroom looks like. Stimulus dollars, in combination with other funds, will be used to support the core position of a professional development specialist in schools, allowing DCPS to provide job embedded professional development. Ultimately, this position will ensure that the IMPACT evaluation system leads to improved outcomes via aligned professional development (RTTT Section D2). These specialists will also be instrumental in supporting the launch of the "Individualized PD Platform" (RTTT Section D5), which will be made available to all LEAs.

- *Secondary Reading and Math Interventions, $2.7MM.* DCPS plans to target students in all high schools who need reading intervention. Efforts will ensure that such students receive individualized reading instruction that is developmentally appropriate. This key initiative supports overall RTTT goals, especially where DC's growth in reading has significantly lagged math growth. DCPS also plans to continue to systematically focus on targeting students for secondary math interventions based on DC-BAS and DC-CAS scores, giving individualized instruction to these students to address deficiencies.

- *Early Childhood Reforms, $2.1MM.* DCPS plans to expand seats in pre-kindergarten classrooms by 2,000 over five years to meet the growing need of high quality early education in the city, using 2010 stimulus funding to create 15 more pre-school and pre-kindergarten classrooms which will serve an additional 260 students. This aligns with the overall RTTT goal of increasing the number of quality seats for students across DC.

- *School Improvement and Restructuring (Title I Required Set-Aside), $2.3MM.* As noted above, DCPS plans to use stimulus funds to support schools in "needs improvement" and "restructuring" status. In particular, DCPS plans to use stimulus funds to support a transition to a Pre-K to 8 school model by funding professional development on middle grades instruction. Plans also include implementation of an advisory period that provides one-to-one guidance to each student from an adult in the building. Moreover, DCPS will continue its Full-Service Schools (FSS), which require extra staff such as a family care coordinator and a mental health counselor. This funding will supplement SIG and RTTT funding in

ensuring that adequate school supports exist as DCPS moves to turnaround its persistently lowest achieving schools.

- *Grants Management and Accountability (Title I Required Set-Aside), $1.2MM.* As noted in Section A2, DC is undergoing a statewide movement towards greater efficiency in managing grants. Thus, just as OSSE will be implementing an improved grant-management platform (see OSSE Implementation Capacity Project budget), so too will DCPS, ensuring increased accountability in grants management for all federal grants, including the RTTT application.

- *Parental Involvement (Title I Required Set-Aside), $0.2MM.* Involving families in student success is an important element of DC's reform agenda. DC held multiple community meetings to give parents the opportunity to provide input into the Race to the Top application. In addition, ensuring effective communication regarding the transition to new standards and assessments has been expressly discussed and budgeted for in the RTTT application. DCPS' commitment to funding school-created innovations in parental involvement through stimulus funding supplements this effort, by ensuring a closer relationship between school and family.

- *Teacher Quality (Title I Required Set-Aside), $1.2MM.* DCPS plans to use stimulus funds to support the recruitment and retention of highly qualified teachers. The RTTT application ensures greater access for all LEAs to a pool of not just "highly qualified" teachers, but also teachers deemed effective and highly effective. This will be achieved through the funding of effective teacher pipelines.

- *Homeless Program and Support for Neglected and Delinquent Students and Other Title I (Title I Required Set-Aside), $1.4MM.* DCPS plans to use stimulus dollars for increased capacity for case management, help with residency and enrollment initiatives, as well as to address real-time student needs. Ensuring that schools have the ability to collaborate on best practices for serving unique student populations through the planned RTTT school collaboration structures will further support this effort.

IDEA Part B Stimulus Funds. While some states may have considered the use of IDEA Part B to be separate from a reform agenda, DC's prioritization of increasing the quality of special education services is critical to the effectiveness of reforms and their long-term sustainability. This is particularly true for DCPS, which spends over $150MM per year on the 2,400 students in private special education placements. Stimulus funds have been planned to ensure that related service providers – such as psychologists, social workers, speech-language pathologists, and more – are able to continue working with students to achieve their IEP goals within their general education classrooms. In addition, stimulus funds will be used to improve special education data collection by ensuring that all components of a student's specialized needs are accurately tracked and reported in the Special Education Data System (SEDS), including data related to private placements. Finally, stimulus funds will be used to improve data systems for Early Stages, the new state-of-the-art early childhood intervention center in DC. This data will ensure better processes for the early identification of learning issues, with a broader goal to reduce the over-identification of students for special education. The RTTT initiative to ensure entry-points to standards for students at all ability levels – as well as the planned connection of the new standards to the SEDS database – supports this effort to increase access to general education curriculum for students with special needs. In addition, the planned RTTT contract for a deep analysis of special education information gaps (at the state level and under OSSE's direction) further supports the strategic importance of

better special education data to inform what is working or not working in special education – ultimately, an important lever for sustaining DC reform.

Stimulus Funds For Preserving Resources and Increasing Equity. Many districts needed the windfall of stimulus funding to maintain adequate baseline education for students. This is also the case for DC, but there is an important additional consideration: ensuring that students in high-poverty schools have access to the arts and to programs for good mental and physical health is fundamental to DC reform efforts. In 2008, DCPS changed its school budgeting formula in order to prioritize equity, implementing a "Comprehensive Staffing Model" through which each school is required to provide art, music, physical education, and counseling. Stimulus dollars are to be used to ensure maintenance of these steps forward in equity. RTTT plans to ensure that OSSE thoughtfully assesses the effectiveness of teachers in high poverty schools to further supplement this work, ensuring that teachers in DC not only represent diverse content areas, but are also effective and highly effective in their teaching.

Title 5B Dissemination Grant Funds. These funds have been used by LEAs, both charter and DCPS, to support the transfer of best practices. Thirteen schools are currently engaged in two collaboratives funded by this effort: the Power of Planning (POP) collaborative and the DC Collaborative for Change (DC3). These programs are the foundation upon which DC plans to build the PLaCEs program, as school leaders have noted that they have had a dramatic impact on instruction and are positioning schools for increased student achievement. Having current participants of the Dissemination Grants programs support the implementation of PLaCEs will ensure that lessons learned about effective execution are captured and collaboratives are able to hit the ground running.

State and Local Funds. As stated in the application, DC has demonstrated a strong commitment to providing funding necessary to support aggressive education reform and student achievement. DC will continue to use its comparatively high per-student formula funding amount strategically to increase the impact of funding by placing a priority on pushing this funding down to the LEA, school, and classroom level as much as possible. This allows LEAs to put the funds where they are really needed. With charter schools, there is total autonomy on how they use their local funds, enabling them to be creative and nimble in adjusting their resource strategies. DCPS, on the other hand, has placed a large priority in recent years on streamlining the central office to make it more efficient so that resources are not tied up in maintaining a large bureaucracy, but rather fund reform-focused central office investments, like building strong instructional improvement systems and a high-quality professional development program. As a result of streamlining central office functions, the majority of DCPS funds actually reach local schools, working to improve student achievement at the ground level by supporting such priorities like the comprehensive staffing model discussed above.

In addition, DC will continue to use interagency innovation funding in the Office of the Deputy Mayor for Education to coordinate wraparound services and evidence-based programs, particularly critical in high-need and turnaround schools. These funds enhance and align with local funds in other agency budgets, such as the Department of Health and the Department of Mental Health, that are dedicated to making available a comprehensive array of services and programs to support youth and families. Finally, the District plans to modernize the learning environment of every DCPS classroom within the next five years under a comprehensive schools master facilities plan. DC will strategically align its school modernization plan and the approved funding associated with the modernization of all schools with its turnaround efforts to ensure that as new programs and schools are opened, the facilities support academic and programmatic needs. The Office of

the Deputy Mayor for Education will work with the school facilities agency and DCPS to coordinate planning for turnaround schools with a goal of accelerating those schools in the pipeline.

Philanthropic Funds. DC is fortunate to have a community of philanthropists that is deeply invested in seeing the planned reforms succeed and student achievement increase, as evidenced by the strong letters of support included with this application. To date, incredibly generous local funders – including individuals, foundations, and corporations – have supported a variety of innovations that either laid the groundwork for, or will supplement, Race to the Top plans. These investments have spanned both charter LEAs and DCPS, as well as the support organizations feeding DC's human capital pipelines and delivering essential data tools (among other things). Of particular note are the following recent investments that are in direct alignment with Race to the Top goals.

The DC Schools Fund, a $23.8 MM fund comprising investments from both local and national funders managed by New Schools Venture Fund, is making strategic investments in the charter sector over the next 3.5 years. Very much in line with DC's Race to the Top Theory of Change, this fund aims to reduce the number of low-achieving schools, catalyze improvements in mid-performers, and support the replication of high-achievers. Investments to date have focused primarily on human capital, performance and data management, and advocacy, parent communication, and organizing.

DCPS, with the support of the DC Public Education Fund and DC Education Compact (now closed), has received commitments from several local and national funders for several key initiatives, including:

- *Human Capital:*
  - Design of IMPACT version 1.0 and roll-out.
  - Performance pay system for highly effective teachers (pending approval of DCPS' proposed collective bargaining agreement).
- *Data and Accountability:*
  - A pilot of the Achievement Network model in 11 DCPS schools, as well as support to design DCPS' system-wide school-based data capacity-building model.
  - Planning and capacity-building for the design of an individualized, online PD system aligned with IMPACT that will be built upon with Race to the Top funding to become the full Individualized PD Platform outlined in section D5.
- *Turnarounds:*
  - Planning years for external providers that are currently in their first year of turning around some of DCPS' lowest-achieving high schools (Friendship Public Charter School and Friends of Bedford), a strategy that proved successful in the pilot and that is thus being proposed in this application.
  - A pilot of differential funding for turnaround schools of an additional $1K per student, a strategy that proved successful in the pilot and that is thus being proposed in this application.
  - Planning year of the Catalyst Schools initiative and support of the program's first two years of implementation costs – allowing Catalyst schools (including 6 STEM-themed elementary and K-8 schools) to complete initial implementation while holding their core budgets harmless.

Summary

Within the context of other funding sources, DC's Race to the Top application is unique in its commitment to increasing school quality at all levels in a targeted and strategic way that leverages diverse federal and private funds directed toward reform initiatives. Ultimately, the budget outlined herein reflects DC's priority: to provide LEAs with strong guidance, support, and information systems that enable them be drivers of dramatic increases to student achievement. The application reflects DC's strong commitment to turning around its persistently lowest-achieving schools, to providing tools and systems for increasing the effectiveness of teachers and leaders and all schools in the system, and to giving high performing schools the resources needed to expand. An investment of $75MM in Race to the Top funding will allow DC to execute successfully on its plans, to make dramatic steps in closing the achievement gap for its students, and to serve as a national model for reform.

Appendix A2.4

Project-Level Budget Tables & Narratives

Appendix A2.4 Project Level Budget Tables & Narratives
OSSE Implementation Capacity: Project-Level Budget Table

Budget Part II: Project-Level Budget Table
Project Name: OSSE Implementation Capacity
Associated with Criteria: All Assurances
(Evidence for selection criterion (A)(2)(i)(d))

Budget Categories	Project Year 1 (a)	Project Year 2 (b)	Project Year 3 (c)	Project Year 4 (d)	Total (e)
1. Personnel	$637,000	$637,000	$637,000	$637,000	$2,548,000
2. Fringe Benefits	$114,675	$114,675	$114,675	$114,675	$458,700
3. Travel					
4. Equipment	$610,000				$610,000
5. Supplies					
6. Contractual	$1,000,000	$1,000,000	$750,000	$750,000	$3,500,000
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)	$2,361,675	$1,751,675	$1,501,675	$1,501,675	$7,116,700
10. Indirect Costs*					
11.Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs					
13. Total Costs (lines 9-12)	$2,361,675	$1,751,675	$1,501,675	$1,501,675	$7,116,700

All applicants must provide a break-down by the applicable budget categories shown in lines 1-15.
Columns (a) through (d): For each project year for which funding is requested, show the total amount requested for each applicable budget category.
Column (e): Show the total amount requested for all project years.
*If you plan to request reimbursement for indirect costs, complete the Indirect Cost Information form at the end of this Budget section. Note that indirect costs are not allocated to lines 11-12.

OSSE IMPLEMENTATION CAPACITY: PROJECT-LEVEL BUDGET NARRATIVE

Purpose:
As noted in Section A2 of the application, OSSE plans to develop a Race to the Top office to oversee all Race to the Top project execution and coordination. This office will actively track data on performance measures, ensure that LEAs are positioned to execute LEA-level projects, and support LEAs in meeting reporting requirements. This office will also oversee all state-level projects and manage the multiple contracts with vendors.

1) Personnel

The following requested personnel will be hired as employees of this project for the four-year duration of the project:

- **Project Director (1),** 100% FTE, $95,000
  - Oversee all RTTT initiatives and coordinate across programs, offices, and agencies.
  - Oversee the RTTT Executive Office and report directly to the Deputy Chief of Staff of OSSE.

- **RTTT Fiscal Manager** (1), 100% FTE, $85,000
  - Act as fiscal manager responsible for overseeing fund distribution to LEAs and ensuring compliance with financial tracking and reporting requirements.
  - Report to the Project Director.

- **Reporting & Implementation Manager** (1), 100% FTE, $85,000
  - Ensure that OSSE and LEAs are using RTTT funds appropriately and effectively and meeting the objectives of the RTTT grant. This individual will be responsible for monitoring all ARRA RTTT programmatic implementation and meeting implementation reporting requirements.
  - Report to the Project Director.

- **Grant & Contract Analyst** (1), 100% FTE, $72,000
  - Provide back-office, data analysis support to the fiscal manager and implementation manager.
  - Manage all contracts associated with RTTT initiatives.
  - Report to the Project Director.

- **Effectiveness Managers,** (3), each 100% FTEs, $75,000
  - Manage components of the RTTT grant related to school, principal, and teacher effectiveness across all assurance areas.
  - Serve as the main points of contact with the District's LEAs.
  - Publish requirements for teacher and principal evaluations and ensure LEAs meet these requirements, gather information on teacher and effectiveness as submitted by LEAs, conduct analysis on effectiveness to determine equitable distribution and effectiveness of hard-to-staff areas, and review LEA plans for addressing effectiveness gaps.
  - Outline and gather information required from LEAs for Prep Program Scorecards; develop Prep Program Scorecards with website contractor; work with certification programs on understanding the scorecards and consequences.
  - Calculate the list of persistently lowest achieving schools annually and make it public, work with DCPS and PCSB to ensure they get plans in place for each school on the list; review plans from DCPS and fund specific teams of people in a "planning year" before a turnaround; review plans from DCPS and fund additional monies for culture-changing solutions at turnaround schools; facilitate quarterly discussions between the Mayor's Office responsible for Modernization Plan and the DCPS team responsible for planning and executing turnarounds.

- Convene the New Standards Working Group.
- Convene a P-20 Consortium.
- Serve as the liaison with LEAs and the DC STEM Learning Network, assisting with the development of the statewide STEM education framework
- Administer the competitive grant process for teacher pipeline programs.
- All three positions report to the Project Director.

- **Research & Data Manager** (1), 100% FTE, $75,000
  - Provide data necessary to develop the New Standards Website; develop the new OSSE Website with data available for stakeholders; support the launch of Prep Program Scorecards; develop an online research request tool; identify and create a portfolio of research-ready data sets; publish a list of research priorities for DC and encourage submission; sort data from the Individualized PD Platform to make research-ready.
  - Report to the Project Director.

The following additional responsibilities will be folded into current roles within the OSSE assessment office at no-cost:

- Develop vendor contract for revised DC-CAS
- Hire vendor to work on revision of DC-CAS for administration in 2012 and oversee management of this contract
- Create a list of vendor possibilities for interim assessments for LEAs
- Review LEA proposals for using funding for interim assessments
- Convene and Manage Student Growth Measure Task Force and the Human Capital Task Force to meet over life of grant
- Oversee the build-out of a system to track growth for all students (i.e., manage vendor)
- Oversee the piloting of new assessments by LEAs
- Identify preferred vendors capable of meeting the needs of LEAs for data-driven instruction and submit list to LEAs
- Supply LEAs with list of preferred vendors for data systems support and development

The above roles are directly built upon specific responsibilities that emerge in the projects identified in DC's RTTT application Sections B through E, such that each program manager is responsible for overseeing the execution of RTTT initiatives.

2) Fringe Benefits

- Fringe benefits are calculated at 18%
- For an annual personnel cost of $637K, this amounts to $114.7K annually

3) Travel

- N/A, positions are local and some travel allowances are built into existing funds that may be used for visits to other states as needed.

4) Equipment

- In order to successfully manage the RTTT grant, OSSE must move beyond its current homegrown system to a more sophisticated grants management software
- OSSE will also need additional technology in terms of laptops for its RTTT staff

- Equipment is any tangible, nonexpendable, personal property having a useful life of more than one year and an acquisition cost of $5000 or more per unit (34 CFR 80.3).

Equipment	Cost of Item	Item Description	Total
Grants management software (1): One federal grants management software package license will be needed to support the effective administration of RTTT and coordination with other federal grant funds	$600,000	Federal grants management software	$600,000
Laptop computers (4): Four laptop computers and printers will be needed to support the work of the RTTT office; the remaining four computer/printer combinations will come from current supply	$2,500	Laptop computers and printers	$10,000

5) Supplies

- N/A, office supplies for OSSE are available through general operating funds

6) Contractual

- OSSE plans to utilize $3.5MM in professional service contracts for additional capacity; $1.25MM in years 1 and 2, and $750K in years 3 and 4
- These contracts will involve:
  - One $1M contract over the first two years for consulting support to build on OSSE's current special education knowledge base and data systems and pinpoint the services needed most by special education students in LEAs. Investing in these services and programs will allow for the most students to remain in their local school and lead to a long-term education and budgetary impact on DC's special education system.
  - Additional short-term (e.g., 1-2 month) contracts for:
    - Collection of data from DC IHEs on preparation level of DC graduates
    - Development of Prep program Scorecards
    - Graphic design and printing of booklets and brochures
    - Analysis of effectiveness measured against indicators of poverty, determining 25% of schools for which these are most highly correlated
    - Analysis of state-wide effectiveness by content area, determining which content areas are "least effective"
- The State will follow all DC procurement procedures, which are consistent with 34 CFR Parts 74.40 - 74.48 and Section 80.36 of EDGAR.

10) Indirect Costs

- N/A

11) Funding for Involved LEAs

- N/A, this is a state-level project

12) Supplemental Funding for Participating LEAs

- N/A, this is a state-level project

13) Total Costs

- Year 1: $2.4MM
- Year 2: $1.6MM
- Year 3: $1.5MM

- Year 4: $1.5MM
- Total: $7.1MM

Standards Website: Project-Level Budget Table

Budget Part II: Project-Level Budget Table
Project Name: Standards Communication
Associated with Criteria: B3
(Evidence for selection criterion (A)(2)(i)(d))

Budget Categories	Project Year 1 (a)	Project Year 2 (b)	Project Year 3 (c)	Project Year 4 (d)	Total (e)
1. Personnel					
2. Fringe Benefits					
3. Travel					
4. Equipment					
5. Supplies					
6. Contractual	$500,000				$500,000
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)	$500,000				$500,000
10. Indirect Costs*					
11.Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs					
13. Total Costs (lines 9-12)	$500,000				$500,000

All applicants must provide a break-down by the applicable budget categories shown in lines 1-15.
Columns (a) through (d): For each project year for which funding is requested, show the total amount requested for each applicable budget category.
Column (e): Show the total amount requested for all project years.
*If you plan to request reimbursement for indirect costs, complete the Indirect Cost Information form at the end of this Budget section. Note that indirect costs are not allocated to lines 11-12.

STANDARDS COMMUNICATION: PROJECT-LEVEL BUDGET NARRATIVE

Purpose:
The goal of the OSSE Common Core Standards communication is to make the standards come alive and to explain how they will be used on a daily basis in the classroom, as well as to provide a bridge between the current DC standards and the common core standards. LEAs will also receive formula funding for school and community implementation. The main component of the roll-out will be an interactive website that will contain information for teachers, administrators, parents, and students, including:

- Materials for teachers/administrators: model standards-based lessons, annotated student exemplars, and online instructional videos
- Materials for students: sample questions on the different standards, an explanation of how the standards connect to their career/college readiness, and an overview of the standards in student-friendly language
- Materials for parents: an introduction to the Common Core, tips on how to monitor your child's progress in mastering the standards, and information on the re-alignment of the DC-CAS. All materials be available in several different languages.

The Common Core communication will leverage work being done by other states, as well as national organizations supporting Common Core development and implementation, like Achieve and the Council of Chief State School Officers. DC plans to utilize a common tool-kit that includes general information about the standards and then to enhance and tailor that information to DC's specific needs. DC will pursue a similar strategy through its assessment consortium with the adoption of a common assessment.

1) Personnel
- N/A. Personnel overseeing this initiative at the state level are included in the OSSE Implementation Plan Budget (page 1-5 in this Appendix).

2) Fringe Benefits
- N/A

3) Travel
- N/A, local supervision

4) Equipment
- N/A

5) Supplies
- N/A, office supplies for OSSE are available through general operating funds

6) Contractual
- OSSE will contract with a web designer to develop and launch a clear, coherent website featuring the new core standards (for example, www.corestandardsdc.org) to provide a one-stop source for materials and information about the new standards in the DC context: $250,000 over 6 months
- OSSE will contract with an outside vendor to create materials for website including bridge documents, documents for parents and other community members, and more: $250,000 over 6 months
- The State will follow all DC procurement procedures, which are consistent with 34 CFR Parts 74.40 - 74.48 and Section 80.36 of EDGAR

7) Training Stipends

- N/A

8) Other

- N/A

9) Total Direct Costs

- $500,000

10) Indirect Costs

- N/A

11) Funding for Involved LEAs

- N/A, this is a state-level project

12) Supplemental Funding for Participating LEAs

- N/A, this is a state-level project

13) Total Costs

- As there are no indirect or LEA-related costs, the total four-year cost is $500,000

Standards Entry Points: Project-Level Budget Table

Budget Part II: Project-Level Budget Table **Project Name:** Standards Entry Points **Associated with Criteria:** B3 **(Evidence for selection criterion (A)(2)(i)(d))**					
Budget Categories	**Project Year 1 (a)**	**Project Year 2 (b)**	**Project Year 3 (c)**	**Project Year 4 (d)**	**Total (e)**
1. Personnel					
2. Fringe Benefits					
3. Travel					
4. Equipment					
5. Supplies					
6. Contractual	$400,000				$400,000
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)	$400,000				$400,000
10. Indirect Costs*					
11.Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs					
13. Total Costs (lines 9-12)	$400,000				$400,000

All applicants must provide a break-down by the applicable budget categories shown in lines 1-15.
Columns (a) through (d): For each project year for which funding is requested, show the total amount requested for each applicable budget category.
Column (e): Show the total amount requested for all project years.
*If you plan to request reimbursement for indirect costs, complete the Indirect Cost Information form at the end of this Budget section. Note that indirect costs are not allocated to lines 11-12.

STANDARDS ENTRY POINTS: PROJECT-LEVEL BUDGET NARRATIVE

Purpose:
OSSE wants to ensure that all students are engaged and challenged by the standards. Many states have crafted documents that help teachers to differentiate instruction based on individual student differences. This manual will help teachers to address the standards, no matter what the skills and needs of their students. Additionally, ensuring that the Common Core standards are available in the Special Education Data System will be help IEP writers connect IEP's to the new standards.

1) Personnel

- N/A. Personnel overseeing this initiative at the state level are included in the OSSE Implementation Plan Budget (page 1-5 in this Appendix).

2) Fringe Benefits

- N/A, see implementation plan

3) Travel

- N/A, local supervision

4) Equipment

- N/A

5) Supplies

- N/A, office supplies for OSSE are available through general operating funds

6) Contractual

- OSSE will work with a state partner to create and print a manual providing a framework and guidance around entry points to the core standards that describes the progression of skills and knowledge for each standard targeted towards meeting the needs of students with disabilities, at-risk students, and high-needs students, similar to the Massachusetts Curriculum Frameworks for Students with Disabilities. Many states have created similar documents, and DC is interested in learning from their experiences. The money will be used to update the manual to connect to the Common Core standards and to revise the document to take into account the specific situation in DC: $100,000 over 8 months (2 months each for Math, ELA, Science and Social Studies)

- OSSE will contract with a vendor to provide teacher training around the manual and the ways it can be used for instructional differentiation and IEP creation: $75,000

- OSSE will contract with a vendor to incorporate the language used in the manual document into SEDS (Special Education Data System). The common core standards entry points will be provided as a dropdown menu so IEP writers can take them into account while writing IEPs: $225,000 over 4 months

- The State will follow all DC procurement procedures, which are consistent with 34 CFR Parts 74.40 - 74.48 and Section 80.36 of EDGAR.

Explanation:

These cost estimates come from discussions with the Massachusetts Department of Education, which has written a similar framework for students with disabilities.

7) Training Stipends

- N/A

8) Other

- N/A

9) Total Direct Costs

- $400,000

10) Indirect Costs

- N/A

11) Funding for Involved LEAs

- N/A, this is a state-level project

12) Supplemental Funding for Participating LEAs

- N/A, this is a state-level project

13) Total Costs

- As there are no indirect or LEA-related costs, the total four-year cost is $400,000

Enhanced Online Data: Project-Level Budget Table

Budget Part II: Project-Level Budget Table
Project Name: Enhanced Online Data
Associated with Criteria: C2
(Evidence for selection criterion (A)(2)(i)(d))

Budget Categories	Project Year 1 (a)	Project Year 2 (b)	Project Year 3 (c)	Project Year 4 (d)	Total (e)
1. Personnel					
2. Fringe Benefits					
3. Travel					
4. Equipment					
5. Supplies					
6. Contractual	$125,000	$75,000	$25,000	$25,000	$250,000
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)	$125,000	$75,000	$25,000	$25,000	$250,000
10. Indirect Costs*					
11.Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs					
13. Total Costs (lines 9-12)	$125,000	$75,000	$75,000	$25,000	$250,000

All applicants must provide a break-down by the applicable budget categories shown in lines 1-15.
Columns (a) through (d): For each project year for which funding is requested, show the total amount requested for each applicable budget category.
Column (e): Show the total amount requested for all project years.
*If you plan to request reimbursement for indirect costs, complete the Indirect Cost Information form at the end of this Budget section. Note that indirect costs are not allocated to lines 11-12.

ENHANCED ONLINE DATA: PROJECT-LEVEL BUDGET NARRATIVE

Purpose:
Because of the wide variety of school choice options, a number of sites present school-level data to allow parents to make comparisons, however, OSSE wants to provide additional information for parents, researchers and other key stakeholders. A user-friendly website that offers aggregate-level data will help engage and inform community members and key stakeholders. OSSE will also provide training to community members to help enable them to understand how these data can help them make more informed decisions.

1) Personnel
- N/A. Personnel overseeing this initiative at the state level are included in the OSSE Implementation Plan Budget (page 1-5 in this Appendix).

2) Fringe Benefits
- N/A, see implementation plan

3) Travel
- N/A, local supervision

4) Equipment
- N/A

5) Supplies
- N/A, office supplies for OSSE are available through general operating funds

6) Contractual
- OSSE will contract with a vendor to create a new, user-friendly website that allows key stakeholders to more easily access data through interactive web functions. Data will be displayed in a choice of graphic displays; spreadsheets can be uploaded into Excel, and data can be analyzed at the school, LEA, and state level, aggregated or by NCLB subgroup: $125,000 the first year, and scaling down in subsequent years as the website is fully developed. The first phase of this project is to be completed by Fall 2011.

- OSSE will contract with a vendor to provide additional data to key stakeholders including parents, teachers, and researchers. Users will be able to download aggregate-level spreadsheets on data including truancy, graduation, attendance, AYP status, and more. The website will add additional school-level data including, at minimum, information on Highly Qualified Teachers, SAT and NAEP scores. The website will display national and state averages to allow for comparisons. The website will allow OSSE to track what types of data users are downloading to get an idea of statewide research priorities: $50,000 – This project is to begin in the second year and be completed by Fall 2012.

- The State will follow all DC procurement procedures, which are consistent with 34 CFR Parts 74.40 - 74.48 and Section 80.36 of EDGAR.

7) Training Stipends
- N/A

8) Other
- N/A

9) Total Direct Costs

- $250,000

10) Indirect Costs

- N/A

11) Funding for Involved LEAs

- N/A, this is a state-level project

12) Supplemental Funding for Participating LEAs

- N/A, this is a state-level project

13) Total Costs

- As there are no indirect or LEA-related costs, the total four-year cost is $250,000

Instructional Improvement Systems: Project-Level Budget Table

Budget Part II: Project-Level Budget Table
Project Name: Instructional Improvement Systems
Associated with Criteria: C3
(Evidence for selection criterion (A)(2)(i)(d))

Budget Categories	Project Year 1 (a)	Project Year 2 (b)	Project Year 3 (c)	Project Year 4 (d)	Total (e)
1. Personnel					
2. Fringe Benefits					
3. Travel					
4. Equipment					
5. Supplies					
6. Contractual					
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)					
10. Indirect Costs*					
11.Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs	$2,000,000	$1,000,000	$1,000,000	$1,000,000	$5,000,000
13. Total Costs (lines 9-12)	$2,000,000	$1,000,000	$1,000,000	$1,000,000	$5,000,000

All applicants must provide a break-down by the applicable budget categories shown in lines 1-15.
Columns (a) through (d): For each project year for which funding is requested, show the total amount requested for each applicable budget category.
Column (e): Show the total amount requested for all project years.
*If you plan to request reimbursement for indirect costs, complete the Indirect Cost Information form at the end of this Budget section. Note that indirect costs are not allocated to lines 11-12.

INSTRUCTIONAL IMPROVEMENT SYSTEMS: PROJECT-LEVEL BUDGET NARRATIVE

Purpose:
Charter LEAs face many challenges connected to data analysis. For many charter LEAs, data is isolated in several different systems, all of which lack the ability to provide student level data to teachers. Additionally, many systems lack the ability to analyze assessment and standards-based classroom performance data according to standards in a way that will inform instruction. OSSE seeks to provide charter LEAs with funding to develop instructional improvement systems that will provide teachers with student-level data. An instructional improvement system enables teachers/administrators to act on information and use their unique expertise to target instructional materials and resources. Charter LEAs will be encouraged to develop consortia to maximize their resources and develop shared systems that can meet group and individual school needs.

1) Personnel
- N/A. Personnel overseeing this initiative at the state level are included in the OSSE Implementation Plan Budget (page 1-5 in this Appendix).

2) Fringe Benefits
- N/A, see implementation plan

3) Travel
- N/A, local supervision

4) Equipment
- N/A

5) Supplies
- N/A, office supplies for OSSE are available through general operating funds

6) Contractual
- N/A

7) Training Stipends
- N/A

8) Other
- N/A

9) Total Direct Costs
- N/A

10) Indirect Costs
- N/A

11) Funding for Involved LEAs
- N/A, this is a state-level project

12) Supplemental Funding for Participating LEAs

- The competitive grant will be structured so that any Participating Charter LEA with a proposal for how to use a portion of this grant in accordance with RFP guidelines set by OSSE in Summer 2010 can submit an application by Fall 2010. Charter LEAs will be encouraged to apply together, through joint- or consortia-driven applications.
- There will be no minimum or maximum number of grants possible.
- Grants will be awarded in late Fall 2010 for implementation of instructional improvement systems to begin in Summer 2011.
- LEAs are free to design their own systems, however, discussions with local vendors have revealed the approximate costs outlined below.
- LEAs will receive funds in excess of the yearly costs outlined below, but will need to collaborate in order to cover the overall system costs. OSSE believes that this method of funding will encourage LEA collaboration. LEAs will be enticed to work with each other and purchase from a single vendor; LEAs who have designed their own systems will have a financial incentive to share with others.

Overall System Costs	Yr 1	Yr 2	Yr 3	Yr 4	4 yr total
Development	$100,000				$100,000
Training	$100,000				$100,000
Project Management	$30,000				$30,000
Testing/Support/Other	$95,000				$95,000
TOTAL	$325,000				$325,000

One-time LEA Costs	Yr 1	Yr 2	Yr 3	Yr 4	4 yr total
Professional Development	$3,000				$3,000
Year 1 System Costs	$22,000				$22,000
Support	$15,000				$15,000
TOTAL	$40,000				$40,000

Ongoing LEA Costs	Yr 1	Yr 2	Yr 3	Yr 4	4 yr total
Professional Development		$2,000	$2,000	$2,000	$6,000
System Costs		$18,000	$18,000	$18,000	$54,000
Support		$10,000	$10,000	$10,000	$30,000
TOTAL		$30,000	$30,000	$30,000	$90,000

13) Total Costs

- Year 1: $2MM
- Year 2: $1MM
- Year 3: $1MM
- Year 4: $1MM
- Total: $5MM

Statewide Research Tools: Project-Level Budget Table

Budget Part II: Project-Level Budget Table
Project Name: Statewide Research Tools
Associated with Criteria: C3
(Evidence for selection criterion (A)(2)(i)(d))

Budget Categories	Project Year 1 (a)	Project Year 2 (b)	Project Year 3 (c)	Project Year 4 (d)	Total (e)
1. Personnel					
2. Fringe Benefits					
3. Travel					
4. Equipment					
5. Supplies					
6. Contractual	$135,000	$100,000	$100,000	$100,000	$435,000
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)	$135,000	$100,000	$100,000	$100,000	$435,000
10. Indirect Costs*					
11.Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs					
13. Total Costs (lines 9-12)	$135,000	$100,000	$100,000	$100,000	$435,000

All applicants must provide a break-down by the applicable budget categories shown in lines 1-15.
Columns (a) through (d): For each project year for which funding is requested, show the total amount requested for each applicable budget category.
Column (e): Show the total amount requested for all project years.
*If you plan to request reimbursement for indirect costs, complete the Indirect Cost Information form at the end of this Budget section. Note that indirect costs are not allocated to lines 11-12.

STATEWIDE RESEARCH TOOLS: PROJECT-LEVEL BUDGET NARRATIVE

Purpose:
OSSE wants to encourage outside researchers (both at universities and nonprofit organizations) to collect data and present their findings. Additionally, OSSE will be able to help focus researchers on its research priorities including the effectiveness of instructional materials and strategies and approaches for educating different types of students. An online data-request tool will allow researchers to request specific information and provide OSSE with important information to gauge community research priorities. It also serves as a monitoring tool for OSSE and allows the state to ensure that researchers have obtained proper authority and adhere to pre-defined parameters for data-use and research reporting. Research-ready data sets ensure that OSSE can quickly respond to many researcher requests for data.

1) Personnel
- N/A. Personnel overseeing this initiative at the state level are included in the OSSE Implementation Plan Budget (page 1-5 in this Appendix).

2) Fringe Benefits
- N/A, see implementation plan

3) Travel
- N/A, local supervision

4) Equipment
- N/A

5) Supplies
- N/A, office supplies for OSSE are available through general operating funds

6) Contractual
- OSSE will contract with a vendor to develop an online research request tool that allows researchers or outside organizations to easily apply for access to the portfolio of data sets: $35,000 – This project is to be completed by Fall 2010.

- OSSE will contract with a vendor to identify and create a portfolio of research-ready data sets, including student achievement, enrollment, teacher and financial data. That same vendor will update the information and regularly publish a list of research priorities: $100,000 per year – This project is to be completed by Fall 2011 and updated annually.

- The State will follow all DC procurement procedures, which are consistent with 34 CFR Parts 74.40 - 74.48 and Section 80.36 of EDGAR.

7) Training Stipends
- N/A

8) Other
- N/A

9) Total Direct Costs
- $435,000

10) Indirect Costs

- N/A

11) Funding for Involved LEAs

- N/A, this is a state-level project

12) Supplemental Funding for Participating LEAs

- N/A, this is a state-level project

13) Total Costs

- As there are no indirect or LEA-related costs, the total four-year cost is $435,000

State Growth Measure: Project-Level Budget Table

Budget Part II: Project-Level Budget Table **Project Name:** State Growth Measure **Associated with Criteria:** D2 **(Evidence for selection criterion (A)(2)(i)(d))**					
Budget Categories	**Project Year 1 (a)**	**Project Year 2 (b)**	**Project Year 3 (c)**	**Project Year 4 (d)**	**Total (e)**
1. Personnel					
2. Fringe Benefits					
3. Travel					
4. Equipment					
5. Supplies					
6. Contractual	$1,000,000	$500,000	$500,000	$500,000	$2,500,000
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)					
10. Indirect Costs*					
11.Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs					
13. Total Costs (lines 9-12)	$1,000,000	$500,000	$500,000	$500,000	$2,500,000

All applicants must provide a break-down by the applicable budget categories shown in lines 1-15.
Columns (a) through (d): For each project year for which funding is requested, show the total amount requested for each applicable budget category.
Column (e): Show the total amount requested for all project years.
*If you plan to request reimbursement for indirect costs, complete the Indirect Cost Information form at the end of this Budget section. Note that indirect costs are not allocated to lines 11-12.

STATE GROWTH MEASURE: PROJECT-LEVEL BUDGET NARRATIVE

Purpose:
The task of aggregating student data for students in LEAs outside of DCPS (i.e., charter LEAs) is complex, and the additional step of linking student growth to specific teachers in a city with high mobility rates and a variety of teaching models is still more complicated. OSSE will contract with a vendor over a four-year period to ensure that the growth analysis of data for charter LEAs in conducted in a way that maximizes economies of scale and makes use of the formula and groundwork already established by DCPS. At the end of the four-year timeframe, OSSE will evaluate whether the analysis can be adopted in-house (i.e., within OSSE) or whether additional funds will be needed from within the state budget to support an ongoing vendor partnership.

1) Personnel

- N/A. Personnel overseeing this initiative at the state level are included in the OSSE Implementation Plan Budget (page 1-5 in this Appendix).

2) Fringe Benefits

- N/A

3) Travel

- N/A

4) Equipment

- N/A

5) Supplies

- N/A

6) Contractual

- Products and Services to be Provided:
  - A database to house student DC-CAS data for 2009 and 2010 for all DC students
  - An analysis of growth for students in charter LEAs, using the entire pool of DC students as the benchmark group (i.e., to determine whether students "beat the odds" for projected gains)
  - A process and implementation plan for roster validation
  - A process for calculating teacher impact on student growth
- Cost:
  - The primary cost of building the database with student data and creating ongoing processes is front-loaded at $500K in Year 1 of the project
  - For every year (including Year 1), the budget includes an ongoing cost for conducting analyses and calculations using validated rosters. This cost is estimated at $500K per year
  - The total project cost is $2.5MM (Year 1 costs of $1MM, followed by an annual cost of $500K in Years 2 through 4)
  - This cost has been benchmarked against the cost that DCPS incurred to develop its IMPACT measure
- The State will follow all DC procurement procedures, which are consistent with 34 CFR Parts 74.40 - 74.48 and Section 80.36 of EDGAR

7) Training Stipends

- N/A

8) Other

- N/A

9) Total Direct Costs

- $2.5MM

10) Indirect Costs

- N/A

11) Funding for Involved LEAs

- N/A, this is a state-level project

12) Supplemental Funding for Participating LEAs

- N/A, this is a state-level project

13) Total Costs

- Year 1: $1MM
- Year 2: $500K
- Year 3: $500K
- Year 4: $500K
- Total: $2.5MM

Expanded Growth Coverage: Project-Level Budget Table

Budget Part II: Project-Level Budget Table
Project Name: Expanded Growth Coverage
Associated with Criteria: D2
(Evidence for selection criterion (A)(2)(i)(d))

Budget Categories	Project Year 1 (a)	Project Year 2 (b)	Project Year 3 (c)	Project Year 4 (d)	Total (e)
1. Personnel					
2. Fringe Benefits					
3. Travel					
4. Equipment					
5. Supplies					
6. Contractual					
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)					
10. Indirect Costs*					
11.Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs			$2,000,000		
13. Total Costs (lines 9-12)			$2,000,000		$2,000,000

All applicants must provide a break-down by the applicable budget categories shown in lines 1-15.
Columns (a) through (d): For each project year for which funding is requested, show the total amount requested for each applicable budget category.
Column (e): Show the total amount requested for all project years.
*If you plan to request reimbursement for indirect costs, complete the Indirect Cost Information form at the end of this Budget section. Note that indirect costs are not allocated to lines 11-12.

EXPANDED GROWTH COVERAGE: PROJECT-LEVEL BUDGET NARRATIVE

Purpose:
In addition to ESEA-required tests, teachers and leaders need more data about student growth in early elementary grades, high school grades, and non-traditional subjects. DC will utilize RTTT funds to expand growth coverage to these areas for the purposes of data-driven instruction and teacher/leader evaluations. Following the OSSE evaluation of LEA growth measures for priority grades and content areas, LEAs will have the option of applying for competitive funds, either individually or collaboratively through consortia, for funds to pilot expanded assessment coverage and to develop other means for calculating student growth beyond ESEA-assessed subjects and grades. OSSE will prioritize funding for measures of student achievement that are statistically rigorous and comparable across classrooms. New assessments must also be aligned with evaluations.

1) Personnel
- N/A, personnel overseeing this initiative at the state level are included in the OSSE Implementation Capacity Budget

2) Fringe Benefits
- N/A

3) Travel
- N/A

4) Equipment
- N/A

5) Supplies
- N/A

6) Contractual
- N/A

7) Training Stipends
- N/A

8) Other
- N/A

9) Total Direct Costs
- N/A

10) Indirect Costs
- N/A

11) Funding for Involved LEAs
- N/A

12) Supplemental Funding for Participating LEAs

- Because this funding will go to Participating LEAs on a competitive basis, it is considered "Supplemental Funding for Participating LEAs."
- The competitive grant will be structured so that any Participating LEA, or group of Participating LEAs, with a proposal for how to use a portion of this grant in accordance with RFP guidelines set by OSSE in Summer 2012 can submit an application by Summer 2012.
- There will be no minimum or maximum number of possible grants.
- Grants will be awarded in Fall 2012, for adoption and launch of new assessments during that school year.
- $2MM is available for 1 year.
- Costing for this project was based on feedback from LEAs on current small-scale pilots and interim assessment development.

13) Total Costs

- Year 1: $0MM
- Year 2: $0MM
- Year 3: $2MM, including launch of competitive grant process
- Year 4: $0MM
- Total: $2MM

Teacher Pipelines: Project-Level Budget Table

Budget Part II: Project-Level Budget Table
Project Name: Teacher Pipelines
Associated with Criteria: D4
(Evidence for selection criterion (A)(2)(i)(d))

Budget Categories	Project Year 1 (a)	Project Year 2 (b)	Project Year 3 (c)	Project Year 4 (d)	Total (e)
1. Personnel					
2. Fringe Benefits					
3. Travel					
4. Equipment					
5. Supplies					
6. Contractual					
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)					
10. Indirect Costs*					
11.Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs		$2,000,00	$1,500,000	$1,500,000	$5,000,000
13. Total Costs (lines 9-12)		$2,000,000	$1,500,000	$1,500,000	$5,000,000

All applicants must provide a break-down by the applicable budget categories shown in lines 1-15.
Columns (a) through (d): For each project year for which funding is requested, show the total amount requested for each applicable budget category.
Column (e): Show the total amount requested for all project years.
*If you plan to request reimbursement for indirect costs, complete the Indirect Cost Information form at the end of this Budget section. Note that indirect costs are not allocated to lines 11-12.

TEACHER PIPELINES: PROJECT-LEVEL BUDGET NARRATIVE

Purpose:
The funding for teacher pipelines is based on the Theory of Change that DC must recruit several hundred effective and highly effective teachers over the next few years if the District is to dramatically alter the current portfolio of school options. Charter LEAs have the greatest needs with regard to effective teacher pipelines. Thus the DC RTTT application provides for the launch of teacher pipeline models through a competitive grant process available to charters and targeted toward programs that will increase the effectiveness of teachers, especially in hard-to-staff areas. Among the specifications will be:

- Preference for programs that meet the bar for alternative certification as outlined in D1, thus creating more alternative pipelines;
- Preference for programs that ensure that teachers are trained in a way that will lead to measurable effectiveness (e.g. by being trained in a high-achieving school) and that include induction and mentoring components to ensure that teachers can be successful in their first two years; and
- Preference for programs that bring in teachers with a strong likelihood of effectiveness in hard-to-staff areas, especially STEM, special education, and early childhood education.

1) Personnel

- N/A, personnel overseeing this initiative at the state level are included in the OSSE Implementation Capacity Budget

2) Fringe Benefits

- N/A

3) Travel

- N/A

4) Equipment

- N/A

5) Supplies

- N/A

6) Contractual

- N/A

7) Training Stipends

- N/A

8) Other

- N/A

9) Total Direct Costs

- N/A

10) Indirect Costs

- N/A

11) Funding for Involved LEAs

- N/A

12) Supplemental Funding for Participating LEAs

- Because this funding will go to Participating LEAs on a competitive basis, it is considered "Supplemental Funding for Participating LEAs."
- The competitive grant will be structured so that any Participating LEA, or group of Participating LEAs, with a proposal for how to use a portion of this grant in accordance with RFP guidelines set by OSSE in Fall 2010 can submit an application in Winter 2011. Another grant round will be held in Winter 2012.
- There will be no minimum or maximum number of possible grants.
- Grants will be awarded in two rounds: Spring 2011 and Spring 2012, for launch in the summers following.
- $5MM is available over the life of the grant: beginning in Summer 2011 and spanning for three years: 2011-2012, 2012-2013, and 2013-2014. LEAs may apply for multi-year grants.
- Costing for this project was based on feedback from DCPS on teacher pipeline costs, as well as input from high-performing charters about costs to sustain residency models that were piloted in the 2009-2010 year (and that are yielding effective teachers).

13) Total Costs

- Year 1: $0MM, launch of competitive grant process
- Year 2: $2MM
- Year 3: $1.5MM
- Year 4: $1.5MM
- Total: $5MM

Professional Learning Communities of Effectiveness (PLaCEs):
Project-Level Budget Table

Budget Part II: Project-Level Budget Table **Project Name:** PLaCEs **Associated with Criteria:** D5 **(Evidence for selection criterion (A)(2)(i)(d))**					
Budget Categories	**Project Year 1 (a)**	**Project Year 2 (b)**	**Project Year 3 (c)**	**Project Year 4 (d)**	**Total (e)**
1. Personnel					
2. Fringe Benefits					
3. Travel					
4. Equipment					
5. Supplies					
6. Contractual					
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)					
10. Indirect Costs*					
11.Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs	$500,000	$1,000,000	$1,000,000	$500,000	$3,000,000
13. Total Costs (lines 9-12)	$500,000	$1,000,000	$1,000,000	$500,000	$3,000,000

All applicants must provide a break-down by the applicable budget categories shown in lines 1-15.
Columns (a) through (d): For each project year for which funding is requested, show the total amount requested for each applicable budget category.
Column (e): Show the total amount requested for all project years.
*If you plan to request reimbursement for indirect costs, complete the Indirect Cost Information form at the end of this Budget section. Note that indirect costs are not allocated to lines 11-12.

PROFESSIONAL LEARNING COMMUNITIES OF EFFECTIVENESS (PLaCEs): PROJECT-LEVEL BUDGET NARRATIVE

Purpose:
DC believes that by harnessing the talent and innovation latent within its system of schools through strategic collaboration, it is possible to transform the District into a system of high-achieving schools. Already, plans are underway, with two formal collaboratives of 13 total schools working together to increase the quality of instruction and raise student achievement. These collaboratives were initially funded by the federal Title VB Dissemination Grant program. RTTT funds will enable DC to add another 11 schools through two projects, directly impacting approximately 4,400 students. By requiring participating schools to partner after the project with one additional school, the indirect impact of the project can double. In this way, a large proportion of mid-performing schools will participate in a network that will better train leaders, raise expectations for teachers and students, and increase overall effectiveness. At the same time, high performing schools will have access to new technology and staff leadership opportunities, as well as the opportunity to share their success.

1) Personnel
- N/A, personnel overseeing this initiative at the state level are included in the OSSE Implementation Capacity Budget

2) Fringe Benefits
- N/A

3) Travel
- N/A

4) Equipment
- N/A

5) Supplies
- N/A

6) Contractual
- N/A

7) Training Stipends
- N/A

8) Other
- N/A

9) Total Direct Costs
- N/A

10) Indirect Costs
- N/A

11) Funding for Involved LEAs
- N/A

12) Supplemental Funding for Participating LEAs

- Given that PLaCEs are collaboratives of individual schools situated within LEAs, funding for PLaCEs will flow to LEAs as supplemental funding through competitive grants. Collaboratives of schools may apply for the funding as a group, or schools may apply to join an existing collaborative.
- There will be two rounds of funding:
  - one in Spring 2011 – to fund one cohort project of 5 schools for three years
  - one in Spring 2012 – to fund an additional cohort project of 6 schools for three years
- Each school in a collaborative will receive funds through its LEA to pay for program costs. Program costs are spread across four components, though the specific items funded within these categories will vary depending on the collaborative goals, theme, and approach. The program components are:
  A) Instructional Leadership Institute;
  B) Execution and Dissemination;
  C) Technology to Support Implementation; and
  D) Accountability and Program Assessment.
- An example approach, drawn from the initial year of the Power of Planning collaborative, is outlined below.

Program Component	Description	Annual Cost per School
Instructional Leadership Institute	A leadership institute for all PLaCE school leaders in early July, followed by a planning institute for school-based staff. Costs include stipends, lodging and travel for expert facilitators, stipends for principals to attend the institute, planning stipends for teachers for the planning institute, and planning resources.	$55,000
Execution and Dissemination	Funds for one Dissemination Coordinator who will be responsible for planning and implementing the project. He or she will work directly with partner school leaders to plan and execute the Instructional Leadership Institute, as well as future planning conferences. He or she will be responsible for documentation and dissemination, via both paper and electronic means, the effective practices developed and shared in the project.	$17,550
Technology to Support Partnership Implementation	Technological resources that support the collaboration concept. For example, in the Power of Planning collaborative this funding has been used for digital video cameras to tape lessons for peer review as well as interactive assessment systems that give teachers the feedback they need to assess the effectiveness of their long-term plans and make appropriate adjustments. Other collaboratives may choose to invest in other technology.	$25,000 (one-time only)
Accountability and Program Assessment	Funds for support and accountability "check-ins" for the partner schools. Periodic daily conferences at which experts who led the Instructional Leadership Institute will return to fine-tune the collaboratives' practice and assist further with implementation. An end-of-year conference will take place each spring, in which teachers at all schools will participate. A final program evaluation will assess collaboratives' impact each at the end of each year.	$8,000
Total Per School in Launch Year		$107,550

To support the goal of reaching 11 schools and 4,400 students, the yearly budget is as follows:

PLaCE Costs	Per School	Year 1	Year 2	Year 3	Year 4
Total Schools		5	11	11	6
Total New Schools		5	6	0	0
Total Annual Cost	$82,550	$412,750	$908,050	$908,050	$495,300
Total One-Time Cost	$25,000	$125,000	$150,000	$0	$0
Total Project Cost					$2,999,150

13) Total Costs

- Year 1: $500K
- Year 2: $1MM
- Year 3: $1MM
- Year 4: $500K
- Total: $3MM

DCPS School Turnarounds: Project-Level Budget Table

Budget Part II: Project-Level Budget Table Project Name: DCPS School Turnarounds Associated with Criteria: E2 (Evidence for selection criterion (A)(2)(i)(d))					
Budget Categories	**Project Year 1 (a)**	**Project Year 2 (b)**	**Project Year 3 (c)**	**Project Year 4 (d)**	**Total (e)**
1. Personnel					
2. Fringe Benefits					
3. Travel					
4. Equipment					
5. Supplies					
6. Contractual					
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)					
10. Indirect Costs*					
11.Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs	$0	$1,395,300	$925,300	$3,952,700	$6,273,300
13. Total Costs (lines 9-12)	$0	$1,395,300	$925,300	$3,952,700	$6,273,300

All applicants must provide a break-down by the applicable budget categories shown in lines 1-15.
Columns (a) through (d): For each project year for which funding is requested, show the total amount requested for each applicable budget category.
Column (e): Show the total amount requested for all project years.
*If you plan to request reimbursement for indirect costs, complete the Indirect Cost Information form at the end of this Budget section. Note that indirect costs are not allocated to lines 11-12.

DCPS SCHOOL TURNAROUNDS: PROJECT-LEVEL BUDGET NARRATIVE

Because charter schools use only the option of "school closure" in the case of schools that fall within the persistently lowest achieving 5% of schools, DC's state approach to school turnaround is a pass-through to DCPS to work on applying one of four turnaround models to the persistently lowest-achieving 5% of schools as well as the broader lowest-achieving 20% of schools as identified by OSSE. As part of its oversight of both the RTTT and SIG grants, OSSE will work with and monitor DCPS efforts.

1) Personnel

- N/A, personnel overseeing this initiative at the state level are included in the OSSE Implementation Capacity Budget

2) Fringe Benefits

- N/A

3) Travel

- N/A

4) Equipment

- N/A

5) Supplies

- N/A

6) Contractual

- N/A

7) Training Stipends

- N/A

8) Other

- N/A

9) Total Direct Costs

- N/A

10) Indirect Costs

- N/A

11) Funding for Involved LEAs

- N/A

12) Supplemental Funding for Participating LEAs

There are 3 strategies that DCPS will be employing:

A) Building Capacity for Support from the Office of School Innovation (OSI) and Office of Leadership Development in the Office of Human Capital

- One person to manage elementary and middle school turnaround partners, 100% FTE, $85,000
- One person to manage the turnaround teams during the prep years, 100% FTE, $85,000
- 18% Fringe

Activity	Description	Year 1	Year 2	Year 3	Year 4	4 yr total
Central Office Capacity Building	2 FTEs	$170,000	$170,000	$170,000	$170,000	$680,000
	Fringe	$30,600	$30,600	$30,600	$30,600	$122,400

B) Funding Prep Years for Turnaround Teams

- 2 teams per year with the following funded components, for a total of 8 schools planned for turnaround (bottom 5%, with select schools in the bottom 20% included because some turnaround efforts for the bottom 5% are already underway)
- 1 Recruiter to support both teams, 100% FTE, $70,000
- 1 Data Analyst (or consultant) to support both teams, 100% FTE, $50,000
- Leadership Team of 3 people, all 100% FTE, $300,000 per team ($600,000 total per year)
- 18% Fringe
- Marketing and Recruitment travel, $20,000 per team ($40,000 total per year)
- Summer staff training (1 wk to prepare for "Summer Bridge"), $30,000 per team ($60,000 total per year)
- Summer Bridge session for incoming students to shift culture, $30,000 per team ($60,000 total per year)
- Printing/materials, $10,000 per team ($20,000 total per year)
- Site visits to other turnaround schools, $10,000 per team ($20,000 total per year)

Activity	Description	Year 1	Year 2	Year 3	Year 4	4 yr total
Prep Year Funding	8 FTES	$720,000	$720,000	$720,000	$720,000	$4,198,400
	Fringe	$129,600	$129,600	$129,600	$129,600	
	Other	$200,000	$200,000	$200,000	$200,000	

C) Differential Funding for Turnaround Schools

- For the 9 DCPS schools in the persistently lowest-achieving 5% (including high schools with persistently low graduation rates), a $1,000 per student stipend will be used in the first two turnaround years. This is the amount of per-student funding given by private donors to the current DCPS turnaround partners, and those organizations have noted that it made a dramatic impact in their ability to fund additional school-level supports for students, making a considerable dent in the positions needed that were not funded through formula-based allocations. The differential funding will begin to phase out in year three ($750 per student) and year four ($500 per student) when DC expects the turnaround efforts to have taken hold such that schools can plan for more sustainable per pupil funding beyond the life of the grant.
- The calculation below is based on an average for 470 students per school, which is the average of the schools in the persistently lowest achieving 5%. There are 4 schools that will begin receiving differential turnaround funding in SY 2010-2011. The remaining five schools will begin in SY 2011-2012.

Activity	Description	Year 1	Year 2	Year 3	Yr 4	Total
Differential Funding	Per student amt; avg students = 470	$1,880,000	$4,230,000	$3,760,000	$2,702,500	$12,572,500

13) Total Costs

- The total cost for the above three initiatives is $17.6MM. However, DC has planned for a seamless use of School Improvement Grant (SIG) funding and Race to the Top funding to maximize the impact of funding for turnaround efforts. In the first three years of the grant, SIG grant funding will be available, provided that DC is able to get a waiver to use SIG funding through Fall 2013. Thus, RTTT funding will be used to "top off" SIG funding in support of the initiatives above. The total cost of the turnaround projects that will be allocated to RTTT is $6,273,300.

	Year 1	Year 2	Year 3	Year 4	Total
TOTAL	$3,130,200.00	$ 5,480,200.00	$ 5,010,200.00	$ 3,952,700.00	$17,573,300.00
SIG Funding	$3,130,200.00	$ 4,084,900.00	$ 4,084,900.00	-	$11,300,000.00
RTTT "Top Off"	-	**$ 1,395,300.00**	**$925,300.00**	**$3,952,700.00**	**$6,273,300.00**

DC STEM Learning Network: Project-Level Budget Table

Budget Part II: Project-Level Budget Table
Project Name: STEM Learning Network
Associated with Criteria: Priority 2
(Evidence for selection criterion (A)(2)(i)(d))

Budget Categories	Project Year 1 (a)	Project Year 2 (b)	Project Year 3 (c)	Project Year 4 (d)	Total (e)
1. Personnel					
2. Fringe Benefits					
3. Travel					
4. Equipment					
5. Supplies					
6. Contractual		$125,000			
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)					
10. Indirect Costs*					
11.Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs					
13. Total Costs (lines 9-12)		$125,000			$125,000

All applicants must provide a break-down by the applicable budget categories shown in lines 1-15.
Columns (a) through (d): For each project year for which funding is requested, show the total amount requested for each applicable budget category.
Column (e): Show the total amount requested for all project years.
*If you plan to request reimbursement for indirect costs, complete the Indirect Cost Information form at the end of this Budget section. Note that indirect costs are not allocated to lines 11-12.

DC STEM LEARNING NETWORK: PROJECT-LEVEL BUDGET NARRATIVE

Purpose:
As part of developing a STEM education framework, DC will partner with Battelle to develop a DC STEM Learning Network and coordinating body that will guide the state's execution of a statewide strategy. Once these structures are defined and detailed, OSSE will commit RTTT resources toward launching the DC STEM Learning Network. OSSE will also commit one of its Effectiveness Managers on the RTTT implementation office to working with LEAs on their STEM plans. Once up and running, OSSE envisions that the DC STEM Learning Network should be able to identify and cultivate additional resources from private sector partners to become self-sustaining beyond the first two years of the RTTT award.

1) Personnel
- N/A, personnel overseeing this initiative at the state level are included in the OSSE Implementation Capacity Budget

2) Fringe Benefits
- N/A

3) Travel
- N/A

4) Equipment
- N/A

5) Supplies
- N/A

6) Contractual
- OSSE plans to utilize this funding to contract with an outside vendor or organization to project manage and to coordinate the DC STEM Learning Network for the first year. $125,000 over 1 year
- The State will follow all DC procurement procedures, which are consistent with 34 CFR Parts 74.40 - 74.48 and Section 80.36 of EDGAR

7) Training Stipends
- N/A

8) Other
- N/A

9) Total Direct Costs
- N/A

10) Indirect Costs
- N/A

11) Funding for Involved LEAs
- N/A

12) Supplemental Funding for Participating LEAs

- N/A

13) Total Costs

- Year 1: $0MM, launch of planning period
- Year 2: $125K
- Year 3: $0MM
- Year 4: $0MM
- Total: $125K

Appendix A2.5

Statements of Support for RTTT Application

COUNCIL OF THE DISTRICT OF COLUMBIA
THE JOHN A. WILSON BUILDING
1350 PENNSYLVANIA AVENUE, NW
WASHINGTON, DC 20004

VINCENT C. GRAY
CHAIRMAN

January 13, 2010

The Honorable Arne Duncan
Secretary
U.S. Department of Education
400 Maryland Avenue, S.W.
Washington, DC 20202

Dear Secretary Duncan,

I am delighted to express my support for the award of Race to the Top Funds to the District of Columbia. The District is unique among jurisdictions throughout the nation, and the award will undoubtedly enhance the potential impact and provide added value to federal investments in the city's school reform efforts.

The first of these unique characteristics is the healthy competition that results from dual public school systems. The District of Columbia has 58 separate local education agencies (LEAs), with only one traditional public school system. The remaining 57 LEAs represent a robust, innovative and increasingly successful public charter school system, with 57 schools on 99 campuses, each with enrollment open to students throughout the city. Creative strategies and instructional models, real opportunities for parental involvement and significant progress among many in minimizing persistent achievement gaps have increased the attraction of public charter schools, sparked exponential growth in enrollment and created a demand for similar innovation within the traditional school system.

Second, the District's relatively small size and centralized bureaucracy allow for expeditious implementation and a more immediate impact on educational reforms. As you know, the city's traditional public school system is governed by a Chancellor that reports directly to the Mayor, and each public charter school is autonomous with regard to operations and instructional strategy. As such, both governance approaches possess the independence to institute bold reforms in each of the four areas targeted by the Race to the Top Fund without a need for state or local school board approval. In addition, our combined school system population of only 74,000 students allows more funding per pupil than similar investments in states with larger student populations, and further enhances the overall impact of investments at the school and student level.

Finally, the District of Columbia benefits from an actively engaged legislative body, which I chair, that understands the critical nature of education reform; it shares the Department of Education's sense of urgency, and has committed its full support. One of my first actions as Chairman was to move oversight of education to the Committee of the Whole, in recognition of this issue's importance to every member of the Council. Since then, this Council has streamlined the educational governance structure, invested unprecedented amounts of local resources in public education and school facilities modernization, and broadened the scope of education reform through landmark legislation the Council adopted ensuring high-quality public education for every child in the District of Columbia beginning at age three.

These unique circumstances make the District of Columbia fertile ground for aggressive reforms in public education. The entire District government stands prepared to support this effort. With Race to the Top funds to leverage existing resources, there is no doubt we will succeed. On behalf of the Council, I urge your support in approving the District's application.

Sincerely,

Vincent C. Gray

Vincent C. Gray

TEL: 202-724-8032 • FAX: 202-724-8085 • E-MAIL: VGRAY@DCCOUNCIL.US

ELEANOR HOLMES NORTON
District of Columbia

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Chairwoman:
ECONOMIC DEVELOPMENT, PUBLIC BUILDINGS, AND EMERGENCY MANAGEMENT
AVIATION
WATER RESOURCES AND ENVIRONMENT

Congress of the United States
House of Representatives
Washington, D.C. 20515

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SUBCOMMITTEES:
FEDERAL WORKFORCE, POSTAL SERVICE, AND DISTRICT OF COLUMBIA
* COVERS DISTRICT OF COLUMBIA ISSUES

COMMITTEE ON HOMELAND SECURITY
SUBCOMMITTEES:
TRANSPORTATION SECURITY, AND INVESTMENT PROTECTION
EMERGENCY COMMUNICATION, PREPAREDNESS, AND RESPONSE

January 11, 2010

Secretary Arne Duncan
U.S. Department of Education
400 Maryland Avenue, S.W.
Washington, DC 20202

Dear Secretary Duncan,

I am pleased to express my support for the District of Columbia's Race to the Top Fund application. District leaders committed to a bold plan to reform our public schools. I believe that the District's application firmly demonstrates the city's commitment to ensuring that every child succeeds.

The District presents a unique opportunity for the U.S. Department of Education to show that the policy and reform priorities of the Race to the Top Fund can have a dramatic impact. Many of the key components that you are seeking in a successful reform environment are in place in DC. The Chancellor of District of Columbia Public Schools is implementing aggressive and innovative strategies at the classroom, school, and central office levels. This has been born out through significant gains in student achievement, both on the state tests and the recent National Assessment of Educational Progress (NAEP). The District also has a large and vibrant charter school sector, providing parents across the city quality public school options, and a dedicated initiative to provide quality pre-kindergarten programming for every child. We are ready to take District reforms to the next level, and a Race to the Top Fund award will help accelerate these efforts. The District will serve as a national model for education reform.

The District's application aligns with your key reform components: a relentless focus on providing an excellent teacher in every classroom and a strong principal in every school; data-driven decision-making; instruction that is tied to rigorous academic standards; and a willingness to intervene in the lowest-achieving schools. Over the next four years, the District will demonstrate a level of dynamic changes that will place us at the top of state education systems and urban education systems.

I urge you to consider the DC Race to the Top Fund application favorably. The city's commitment to reform has been clearly stated. With your support, I am confident the District will be a leader in the country in raising the bar and enabling all of our students to succeed.

Sincerely,

Eleanor Holmes Norton

National Press Building
529 14th Street, N.W., Suite 900
Washington, D.C. 20045
(202) 783-5065
(202) 783-5211 (Fax)

2136 Rayburn House Office Building
Washington, D.C. 20515
(202) 225-8050
(202) 225-3002 (Fax)
(202) 225-1904 (TDD)
www.house.gov/norton

2041 Martin L. King Avenue, S.E.
Suite 300
Washington, D.C. 20020-5734
(202) 678-8900
(202) 678-8944 (Fax)

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DISTRICT OF COLUMBIA
PUBLIC CHARTER SCHOOL BOARD

January 13, 2010

Superintendent Kerri Briggs
Office of the State Superintendent of Education
Government of the District of Columbia
One Judiciary Square
441 4th Street NW
Suite 350N
Washington, DC 20001

Dear Superintendent Briggs,

On behalf of the DC Public Charter School Board (PCSB), I am pleased to express our support for the District of Columbia's Race to the Top Fund application. The application reflects support for the bold reforms currently underway in DC, including those within the charter school sector, which is working to provide students and parents across the city with quality public school options. The application also reflects the spirit of collaboration and innovation that has reinvigorated our reform efforts in the District, and I am pleased to have your commitment that we will continue down this path going forward.

As you know, the PCSB is committed to ensuring school quality. Our new Performance Management Framework ensures a process for holding accountable charter schools that do not meet a rigorous bar for quality in terms of academic and non-academic results for students. Consistent with our Framework, we will implement a plan for closure of any charter school on the list of "persistently lowest-achieving schools," as defined in the District's Race to the Top application.

In order to identify the schools that are persistently lowest-achieving, we will work with you and your office to review the criteria and to ensure that the appropriate definition and methodology are in place. We are committed to meeting the goals of turnaround in the Race to the Top application, and welcome the partnership with the Office of the State Superintendent in this endeavor.

The Public Charter School Board is pleased to be a part of the effort to transition DC to a system of high-achieving schools.

Sincerely,

(b)(6)

Thomas A. Nida
Board Chair

3333 14th St., NW • Suite 210 • Washington, DC 20010 • Office 202-328-2660 • Fax 202-328-2661 • www.dcpubliccharter.com

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January 11, 2010

Secretary Arne Duncan
U.S. Department of Education
400 Maryland Avenue, S.W.
Washington, DC 20202

Dear Secretary Duncan:

I am delighted to express my support for the District of Columbia's Race to the Top Fund application. As the D.C. application demonstrates, District leaders are firmly committed to ensuring that every child succeeds.

The District is truly ahead of the curve in creating and implementing a visionary education reform agenda. Many of the key components of a successful reform environment that you are seeking are in place in D.C.

The District has a vibrant public charter school movement, providing parents across the city, especially the most disadvantaged, with quality education options. This 14-year old school reform, which now educates 38% of D.C. public school children, has closed the citywide student achievement gap by 25 percent in three years. As you know, the District of Columbia Public Schools is now also aggressively pursuing reform, greatly strengthening innovation and accountability across the board.

As a result of D.C.'s school reforms, we are seeing significant gains in student achievement, both on the state tests and the recent National Assessment of Educational Progress. We are ready to take District reforms to the next level, and a race to the top fund will accelerate these efforts. The D.C. application presents a unique opportunity to show that the Race to the Top Fund can have a dramatic impact and allow the District to serve as a national model for education reform.

The District's reform strategies align well with Race to the Top priorities: a relentless focus on providing an excellent teacher in every classroom and a strong principal in every school; data-driven decision-making; instruction that is tied to rigorous academic standards; and a willingness to intervene in the lowest-achieving schools. The Race to the Top funds will enable the District, over the next four years, to increase the rate of change and create outcomes for students that position the District as a model for state education systems and urban education systems.

I urge you to consider the D.C. Race to the Top Fund application favorably.

With your support, I am confident the District will lead the nation in raising the bar and enabling all of our children to succeed.

Sincerely,

Robert Cane
Executive Director

May 28, 2010

The Honorable Arne Duncan
Secretary
U.S. Department of Education
400 Maryland Avenue, S.W.
Washington, DC 20202

Re: Business Community Support for District of Columbia Race to the Top Application

Dear Secretary Duncan,

On behalf of the Federal City Council and the District of Columbia Chamber of Commerce, we are pleased to offer the business community's support for the District of Columbia's Race to the Top Fund application. Over the past three years, public education reform has been a top priority for our elected leaders and for the community at large. It has been difficult work, but the commitment to our children is clear, and we feel that a foundation has been set for great change and progress in the years ahead. The Race to the Top competition offers an opportunity to accelerate Washington DC's education reform progress and to ensure an excellent public school system right here in the nation's capital. We respectfully seek your favorable review and response.

For too long, children in the District of Columbia have been victims of a fragmented and rudderless public education system that is now beginning to show signs of stability and improvement. Over the past few years, our elected officials have united to make the success of our traditional public school system the District's top priority, while celebrating, at the same time, the growth and success of our robust network of public charter schools. We can say with confidence that the foundation for long-term success is being built here in the District, and in many aspects, these efforts represent the leading edge of the vision set forth in Race to the Top – a vision founded on teaching excellence, high expectations, and a focus on student achievement and success.

Education stakeholders from across the nation are already looking to the District of Columbia to see whether our efforts will bear fruit. Those who have watched have seen our elected officials and school leadership work jointly to develop a culture of accountability in the central office, implement data-driven decision-making, recruit new school leaders to serve as principals in our

FEDERAL CITY COUNCIL • 1156 15th Street, NW, Suite 600 • Washington DC 20005 • Tel: (202) 223-4560
D.C. CHAMBER OF COMMERCE • 1213 K Street, NW • Washington, DC 20005 • Tel: (202) 347-7201
GREATER WASHINGTON BOARD OF TRADE • 1725 I Street, NW • Washington, DC 20006 • Tel: (202) 857-5900

schools, and make teaching excellence a top priority. These efforts have already had a positive impact on student achievement, according to the results of recent state and national assessments. In recent months, we have seen the introduction of a robust teacher evaluation and professional development framework that we believe will improve accountability in the classroom. We are also optimistic that a new agreement between the teachers union and the D.C. Public Schools will be ratified shortly, ushering in a new era of teaching excellence where our teachers are competitively paid, professionally supported, and rewarded for their ability to help children succeed. Likewise, our public charter school sector is now able to showcase a number of excellent schools, which are proving year-in and year-out that every child – regardless of their neighborhood, household income or family background – can perform at the highest levels. The District of Columbia has shown its commitment, not just with its focus on turning around our K-12 system, but also with investments in universal pre-kindergarten and additional pathways to higher education in community college and four-year university settings.

The goal for the District of Columbia is to maintain this positive momentum and, with Race to the Top funding, accelerate the next phase of improvements. Over the next few years, your support would help the District of Columbia make significant progress in turning around the lowest-achieving schools, strengthening the human capital and data infrastructure needed to help all schools improve, and ensuring that the highest performing schools are able to share their best practices with other schools in the city. We see the Race to the Top competition as a chance to solidify the gains being made with our reform efforts but also to showcase, to the nation, real progress in education, based on strong school leadership, excellent instruction, high expectations, and a relentless focus on helping each student fulfill his or her potential.

We urge you to support and fund the District of Columbia's Race to the Top application, and we count on your leadership in helping make the nation's capital a model for the entire country.

Sincerely,

John W. Hill	Barbara Lang	James Dinegar, CAE
CEO	President & CEO	President & CEO
Federal City Council	D.C. Chamber of Commerce	Greater Washington Board of Trade

Attachment

Brief Description of Business Organizations in Support

Federal City Council
1156 15th Street, NW, Suite 600, Washington, DC 20005

The Federal City Council is a 501(c)(3) non–profit, non–partisan organization dedicated to the improvement of the Nation's Capital. Established in 1954 and modeled on Pittsburgh's Allegheny Conference on Community Development, the Council is composed of and financed by over 200 of the region's top business, professional, educational, and civic leaders.

Since 1960, during the administration of John F. Kennedy, members of the President's Cabinet and a number of other senior Federal officials have served as Federal Trustees in an ex-officio capacity.

Serving as a catalyst for progress, the Council works to improve the city by focusing the creative and administrative talents of its members on major problems and opportunities. Typically, the Council takes on a very limited number of projects at any given time. In most instances, these projects are large and complex, and they frequently involve the private sector, the Federal government, and the District government.

D.C. Chamber of Commerce
1213 K Street, NW, Washington, DC 20005

The DC Chamber of Commerce is the premier voice of business in the District of Columbia. As business' champion, we provide leadership on a broad spectrum of legislative and policy issues. Our leadership and advocacy efforts are never as important as when policy decisions are made that crucially affects businesses' growth and bottom line.

The D.C. Chamber has played a vital role in helping grow the D.C. economy, create more jobs, and improve the District's competitiveness regionally. With over 2,000 members, the Chamber has the ability to greatly influence the decision making of the city's leaders and improve the climate for doing business in D.C. Members include businesses that range from small, start up companies to large, multi-million dollar corporations.

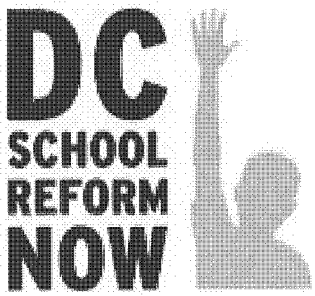
Greater Washington Board of Trade
1725 I Street, NW, Washington, DC 20006

The Greater Washington Board of Trade is the largest regional network of business and nonprofit leaders and the only regional organization representing all industry sectors. Founded in 1889, the Board of Trade enjoys a long history of creating and maintaining a business climate that is healthy, inviting and profitable for the regional business community and the community at large.

As the regional business organization, the Board of Trade addresses business concerns that stretch across geographic boundaries. Pro-business and bipartisan, the Board of Trade convenes business, nonprofit and government leaders to collaborate on important issues throughout the District of Columbia, Suburban Maryland and Northern Virginia.

A 501(c)(6) association, the Greater Washington Board of Trade is supported by its members, programs and events. The membership is comprised of members from *Fortune* 100 companies to small businesses and nonprofit organizations.

DC School Reform Now
1730 Massachusetts Avenue NW
Washington, DC 20036



May 27, 2010

Secretary Arne Duncan
U.S. Department of Education
400 Maryland Avenue SW
Washington, DC 20202

Dear Secretary Duncan,

On behalf of DC School Reform Now, I enthusiastically offer my support for the District of Columbia's Race to the Top Fund application. The District's bold reforms have brought unprecedented leadership and accountability to our schools, and we have seen student achievement steadily rise as a result. Recent growth on NAEP reading scores, unmatched by any school district in the country, demonstrates that our schools are on the right track—although we still have far to go. The District is uniquely positioned to deliver on its promise to close the black-white student achievement gap and deliver a quality education to every student.

DC School Reform Now is a nonprofit advocacy group dedicated to building a civic movement in DC that demands and protects school reform to improve student achievement. We accomplish this by raising public awareness, cultivating parent and community champions, and educating policy-makers. Our community outreach and advocacy focuses on securing excellent teachers and school leaders, engaging parents, demanding that resources be allocated equitably, and ensuring that all education professionals are held accountable for outcomes that drive student achievement.

Two years ago, such outcomes seemed impossible in the District. Now, thanks to the new contract, IMPACT, and the hard work of Chancellor Rhee and District of Columbia teachers, principals, and students, we are on the cusp of realizing our goals. The new WTU Contract represents a victory for students who too often remain unengaged and unmotivated by their education by ensuring that DCPS can attract and retain the best teachers. The Contract places teachers' professional growth first and foremost. IMPACT helps our struggling teachers by providing extensive, meaningful feedback from experienced peers who are experts at driving student achievement.

Selecting the District of Columbia as a winner of the Race to the Top fund would send a hopeful message to other struggling districts: substantive change is possible with hard work and dedication to our children's futures. The unjust and inexcusable achievement gaps that have plagued our country are finally being eradicated in DC, and we appreciate your recognition and support of our mission to see every child fulfill his or her potential.

Thank you for your consideration of the District of Columbia's Race to the Top Fund application. Should you have any questions, please contact me at 202-315-2410 or kehrgood@flamboyanfoundation.org.

Sincerely,

(b)(6)

Kristin Ehrgood
Board Chair

DISTRICT OF COLUMBIA
COLLEGE
SUCCESS
FOUNDATION

1220 12th Street SE, Suite 110, Washington, D.C. 20003-3722
ph: 202.207.1800 • fx: 202.207.1801 • toll free 877.655.4097
www.dccollegesuccessfoundation.org

January 11, 2010

Secretary Arne Duncan
U.S. Department of Education
400 Maryland Avenue, SW
Washington, DC 20202

Dear Secretary Duncan:

I am pleased to express my support for the District of Columbia's Race to the Top Fund application. District leaders are committed to a bold plan to reform our public schools. As the DC application demonstrates, we are firmly committed to ensuring that every child succeeds.

The District is truly ahead of the curve in creating and implementing a visionary education reform agenda. Many of the key components you are seeking in a successful reform environment are in place in DC. The Chancellor of District of Columbia Public Schools is implementing aggressive and innovative strategies at the classroom, school, and central office levels. As a result, we are seeing significant gains in student achievement, both on the state tests and the recent National Assessment of Educational Progress (NAEP). The District also has a vibrant charter school movement, providing quality public school options to parents across the city, and a dedicated initiative to provide quality pre-kindergarten programming for every child. We are ready to take District reforms to the next level, and a Race to the Top Fund award will accelerate these efforts. The DC application represents a unique opportunity to show that the Race to the Top Fund can have a dramatic impact – the District will serve as a national model for education reform.

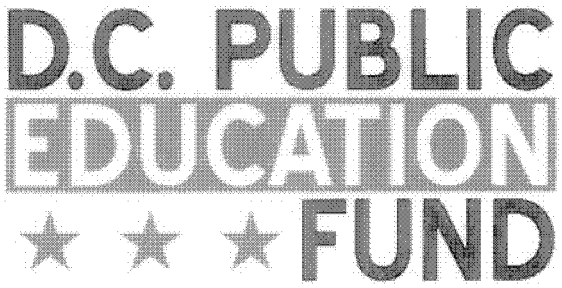
The District's reform strategies align well with Race to the Top priorities: a relentless focus on providing an excellent teacher in every classroom and a strong principal in every school; data-driven decision-making; instruction that is tied to rigorous academic standards; and a willingness to intervene in the lowest-achieving schools. The Race to the Top funds will enable the District, over the next four years, to increase the rate of change and create outcomes for students, positioning the District as a model for state and urban education systems.

I urge you to consider the DC Race to the Top Fund application favorably. With your support, we are confident the District will lead the country in raising the bar and enabling all our students to succeed.

Sincerely,

Bob Craves
President and CEO

Herbert R. Tillery
Executive Director



January 13, 2010

Secretary Arne Duncan
U.S. Department of Education
400 Maryland Avenue, S.W.
Washington, DC 20202

Dear Secretary Duncan,

DC Public Education Fund is pleased to express our support for the District of Columbia's Race to the Top Fund application.

DC Public Education Fund was founded in November 2007 to support Mayor Fenty and Chancellor Rhee's bold reform work, and to create a long-term vehicle for public-private partnerships in support of DCPS. Our mission is to improve student achievement in the District of Columbia by serving as a strategic partner to businesses, foundations, community leaders, and individual donors in supporting and investing in high-impact programs with the District of Columbia Public Schools (DCPS).

In the past year, we have been proud to support several mission-critical DCPS initiatives, including:

- IMPACT, the revolutionary new teacher effectiveness assessment system;
- DC Catalyst Project, a themes-based school transformation model; and
- The Achievement Network pilot, an intensive, school-based data capacity-building program.

Additionally, if and when DCPS and the Washington Teachers' Union ratify a new Collective Bargaining Agreement, we will be honored to support it – making DCPS' highly effective teachers the highest paid educators in the nation. Individually, these initiatives represent some of the most critical school reform work happening anywhere in the United States. Taken together, they exemplify the strong alignment between DCPS' Strategic Plan and your Race to the Top agenda.

While our mission is focused primarily on DCPS, we helped fund the preparation of the DC Race to the Top application because we saw in this competition the potential to pair the current aggressive reform efforts underway in DCPS with the strengths of the District's entrepreneurial, high-performing charter schools and networks. Throughout the Race to the Top planning process we have been incredibly impressed by the synergy between the District's education leaders. This application represents a new level of collaboration between traditional and charter schools, and further solidifies our belief that DC is poised to make a momentous breakthrough – eliminating the achievement gap and ensuring that all children in the District are attending high quality schools.

We urge the Department of Education to consider DC's application favorably. DC is fortunate to have a community of philanthropists that is deeply invested in seeing the planned reforms succeed and student achievement increase. With your support, we can build on the District's momentum and create long-term, sustainable change in DC's public schools.

Sincerely,

Cate Swinburn
President

1534 14th Street NW • Washington, DC 20005 • (202) 355-5052

the achievement network

January 12, 2010

The Honorable Arne Duncan
Secretary
U.S. Department of Education
400 Maryland Avenue SW
Washington, D.C. 20202

Re: The District of Columbia's Race to the Top Application

Dear Secretary Duncan:

The Achievement Network is writing this letter in support of the District of Columbia's Race to the Top application.

A non-profit organization, The Achievement Network provides support and tools to build the capacity of 33 D.C. schools to use data from regular, standards-aligned interim assessments to improve students' academic achievement. The Achievement Network also has a formal partnership with the District of Columbia Public Schools to apply its data-driven approach to DCPS's support of its schools. The District of Columbia is one of the six urban Networks served by The Achievement Network, which currently serves almost 100 schools in the United States.

From our work in D.C., The Achievement Network believes that the District of Columbia is well positioned to successfully integrate the key elements of the Race to the Top application. Many of these critical elements already exist:

Commitment to using data to increase student achievement: From our current work with the charter community (22 schools) and the District of Columbia Public Schools (11 schools), both types of LEA's are invested in using data to increase achievement and are prioritizing the work as a key lever of improvement. The Office of the State Superintendent of Education has also given a clear message about the importance of using data by requiring LEAs participating in RTTT to use interim assessments. Our experience shows there is a strong appetite and capacity for further and deeper work with data across the state.

Alignment with existing state priorities: The District of Columbia Public Schools is already implementing a clear *Teaching and Learning Framework* which trains teachers on the key elements of high quality instruction, focused on: 1) planning for standards to be covered; 2) teaching lessons that are aligned to standards and 3) assessing to determine gaps in student learning. This Framework is perfectly aligned to the RTTT's focus on standards, assessment and

the achievement network

teacher and principal quality. Most importantly, it illustrates that D.C. is already building the structures and processes known to increase student achievement.

Human Capital: Organizations like Teach for America and New Leaders for New Schools exist in D.C. and their presence is building a pipeline of talented school leaders and teachers who have exposure and initial training in backwards planning, aligning curricula to state standards, using data to increase student achievement and setting a belief in high expectations for all students. Many of the schools we serve have NLNS Residents in leadership positions and TFA corps members in the classroom and these schools represent strong candidates for our approach to plan, teach, assess and act on data to close gaps in student learning.

Ability to share best practices in data inquiry work: The schools' geographic proximity and the unique mix of charter schools and district schools promote practice sharing for the effective use data to increase achievement. There is evidence that practice sharing is beginning. Our organization hosts 5 annual Network events in D.C. for district and charter schools and the most recent event had over 100 school leaders and teacher leaders across the schools come together to share what is working.

These conditions—plus the commitment of local leadership— demonstrate the existing efforts to support the key elements of D.C Race to the Top application. We are confident that an investment in Washington, D.C. would lead to increased student achievement across the state.

Respectfully Submitted,

John Maycock, Chief Program Officer

Ted Preston, Chief Executive Officer

The Achievement Network
44 School Street
Boston, MA 002108
(617) 725-0000

CITYBRIDGE
FOUNDATION

January 12, 2010

Secretary Arne Duncan
U.S. Department of Education
400 Maryland Avenue, S.W.
Washington, DC 20202

Dear Secretary Duncan,

It is with great pleasure that I write to express my support for the District of Columbia Race to the Top Fund state application. Through CityBridge Foundation, our private family foundation, my family and I have been working in DC education reform for nearly 10 years. We have committed over $10 million to this work since 2000. Our work spans the K-12 system and focuses on traditional public schools as well as the charter school sector. We have supported the development of a Kindergarten Readiness Assessment for public school students, created new pipelines for talent to enter classrooms across the city, and helped to launch two new elementary charter schools in the city's highest need neighborhoods.

There is no doubt that in Washington, DC our education reform movement is thriving. Our schools have shattered the prevailing orthodoxy about what low-income students can and should accomplish. We may profit more than any other American city from the fortunate convergence happening in our field with knowledge, practice, and funding aligning in one district. My CityBridge colleagues and I believe that Washington can be the first city conclusively to break the link between poverty and low academic achievement.

In our Chancellor Michelle Rhee, DC has the most aggressively hopeful (and perhaps the bravest) public school leader in the nation. We have a mayor whose political capital is solidly behind real reform, no matter how difficult. Achievement scores have improved steadily, talent from all over the nation is flocking to the city's schools, and DC now boasts some of the highest-performing charter schools in the nation. Given the small, manageable size of our public school system, the robust charter market, and the availability of local, national, and Federal funding, DC is ideally positioned for rapid, sustained progress—the kind of progress that may take us across the finish line and actually eliminate educational inequality. DC is becoming a talent mecca and a crucial laboratory for education reform. As our successes build, this trend should intensify. Success brings more investment, more talent, and more political space for those leading reform—a virtuous cycle that may provide a breakthrough of historic proportion.

The Watergate | Tel: 202.266.7990 | Fax: 202.266.5917 | 600 New Hampshire Avenue, NW | Washington, DC 20037

The pro-reform signal sent to the nation should DC win this Race to the Top Fund competition will be significant. At CityBridge, we stand ready to put our weight behind this reform agenda and its sustainability across time. We urge the Department of Education to consider this application favorably. With your support, we can build upon our momentum and lead the country in showing what is possible and what can be done to create real, sustainable change in public education.

Sincerely,

Katherine B. Bradley
President and Founder

the broad foundation education

Eli Broad
Founder

January 12, 2010

Race to the Top Review Committee
U.S. Department of Education
400 Maryland Avenue, Southwest
Washington, DC 20202

Re: Endorsement of D.C.'s Race to the Top Application and Plan

Dear Committee Members,

I am writing to enthusiastically express my support for the District of Columbia Race to the Top application to U.S. Department of Education (ED). The Broad Foundation views the District of Columbia as one of the most promising urban districts in the country. We have been impressed with D.C.'s bold efforts to transform its public education system and the remarkable improvement in student achievement as exemplified by state tests and the recent National Assessment of Educational Progress (NAEP) over the last two years.

The District presents a unique opportunity for the Department of Education to demonstrate that the Race to the Top Fund can actually change the unacceptable results of the American education system. Many of the reform elements that ED believes will improve our school systems are in place in DC. Most children in D.C. attend the District of Columbia Public Schools (DCPS). DCPS Chancellor Michelle Rhee has energized the city around education and is implementing aggressive and innovative strategies at the classroom, school, and central office levels. She also has demonstrated a commitment to performance and has taken aggressive steps to hold schools and people accountable for failing to improve the educational results of D.C.'s children. The District also has a vibrant charter school movement where innovative entrepreneurs are providing parents across the city with high-quality public school options. Several charter schools such as KIPP-DC, D.C. Prep and El Haynes are shattering myths that poor children cannot learn at the same pace as their affluent counterparts.

Our Foundation is a national venture philanthropy focused on dramatically improving urban K-12 public education. We are pleased to be an ongoing partner with D.C. as an investor in DCPS and the charter sector. We are eager to continue our involvement in the education reform activities underway in D.C.

Based on D.C.'s leadership team, the reforms underway, student outcomes over the last two years, and the quality of D.C.'s RTTT strategy, we believe that D.C. will dramatically improve educational outcomes for students. This work has the potential to be instructive for other states across the country, and we encourage you to consider their application.

Sincerely,

(b)(6)

Eli Broad

The Eli and Edythe Broad Foundation
10900 Wilshire Boulevard, Twelfth Floor | Los Angeles, California 90024

T 310.954.5001
F 310.954.5014
ebroad@broadfoundation.org
www.broadfoundation.org

FIGHT FOR CHILDREN

CHAMPIONING CHANGE * CHANGING LIVES

January 14, 2010

Secretary Arne Duncan
U.S. Department of Education
400 Maryland Avenue, S.W.
Washington, DC 20202

Dear Secretary Duncan,

On behalf of Fight For Children, I am honored to express support for the District of Columbia's Race to the Top Fund state application. Fight For Children is an independent not-for-profit organization that recognizes, promotes, and cultivates quality education for low-income children in the District. As a partner working alongside DC Public Schools (DCPS) and DC charter schools, I have seen firsthand the city's commitment to public education reform. The District is now combining the lessons learned from our decade-old charter school movement with the aggressive implementation of effective practices in DC Public Schools. I am confident that our city will not only be successful in its education reform efforts, but will create a national model other states will emulate.

Because our education leaders, including Mayor Adrian Fenty, DC Public Schools Chancellor Michelle Rhee, and State Superintendent Kerri Briggs, have laid so much groundwork for reform, the District is uniquely positioned to demonstrate to the nation that policy and reform priorities of the Race to the Top Fund can have a dramatic and lasting impact on student achievement. Our local school leaders are going well beyond talking about reform. They are working diligently and quickly to put in place the proven components of excellent schools. For example, the District has made it a priority to ensure there is an excellent teacher in every classroom and that every school is led by an effective principal. Through Fight For Children's Quality Schools Initiative over the past two years, we have recognized several DCPS and charter schools for their leadership in these areas. In addition to getting the human capital equation correct, the District recognizes the crucial role that effective use of data plays in instruction and overall school success. The ongoing implementation of DCPS's effectiveness assessment system, IMPACT, including its use of student growth data to evaluate educators, is concrete evidence of the city's commitment to reform. Fight For Children has been a major partner for DCPS and a private funder of this ground-breaking initiative.

Today, the District is demonstrating many of the guiding principles described in the Race to the Top Fund. We believe that a grant from the Race to the Top Fund will enable us to push beyond basic reform and demonstrate that a system of low-achieving schools can quickly be reinvented. The Race to the Top Fund will also allow the District to ensure that its oversight and management systems are strong so that the reforms it is making today will endure.

On behalf of Fight For Children, I ask that you give careful consideration to the District's Race to the Top Fund application. There is no doubt that our city's leaders, teachers, and parents are committed to lasting education reform. With the support of the Race to the Top Fund, we can accelerate our progress and create a national model for education excellence in the Nation's Capital.

Sincerely,

Michela English

Michela English
President & CEO

1825 K Street NW, Suite 1080
Washington, DC 20006
Main 202.772.0400
Fax 202.772.0401
www.fightforchildren.org

WASHINGTON
Regional Association of
GRANTMAKERS

January 9, 2010

Secretary Arne Duncan
U.S. Department of Education
400 Maryland Avenue, S.W.
Washington, DC 20202

Dear Secretary Duncan,

On behalf of Washington Grantmakers, I am pleased to express my support for the District of Columbia's Race to the Top Fund application. Over two years ago, the District undertook a bold course of action to transform our public education system in order to provide all our students with the opportunity to succeed. Since that time I have been continually impressed by the District's sense of urgency and purpose befitting the potential our students possess.

Washington Grantmakers is a membership association of nearly 100 foundations and corporate giving programs in the Washington metropolitan region. Collectively, our members invest more than $450 million annually to nonprofit organizations serving our region's neediest residents. In addition, our members are engaged in the complex issues facing our community such as public education reform.

Washington Grantmakers has enjoyed an open and collaborative relationship with the District's education leaders over the past two years. This ongoing commitment to engaging with the funding community has been instrumental in keeping Washington Grantmakers' members informed and supportive of the advances within our public education system.

The District presents a unique opportunity for the U.S. Department of Education to demonstrate that the policy and reform priorities of the Race to the Top Fund can have dramatic impact. Many of the key components you seek in a successful reform environment are in place in DC. The Chancellor of District of Columbia Public Schools is implementing aggressive and innovative strategies at the classroom, school, and central office levels. The District also boasts a vibrant charter school movement, providing parents across the city with quality public school options, and a dedicated initiative to provide quality pre-kindergarten programming for every child. We are ready to take District reforms to the next level, and a Race to the Top Fund award will help accelerate these efforts.

The District's application aligns with your key reform components: a relentless focus on providing an excellent teacher in every classroom and a strong principal in every school, data-driven decision-making, instruction that is tied to rigorous academic standards and a willingness to intervene in the lowest-achieving schools. Race to the Top funds will enable the District, over the next four years, to increase the pace of change, and will make the District a model for urban education systems.

On behalf of Washington Grantmakers, I urge you to consider the DC Race to the Top Fund application favorably. With your support, the District will build on our current momentum and lead the country in showing that it is possible to create real, sustainable change in public education and in the opportunities we provide for all our students.

Sincerely,

Tamara Copeland

Tamara Lucas Copeland
President
Washington Regional Association of Grantmakers
1400 16th Street, NW
Suite 740
Washington, DC 20036
copeland@washingtongrantmakers.org
202/939-3441

investing in social change
venture philanthropy partners

May 26, 2010

Secretary Arne Duncan
U.S. Department of Education
400 Maryland Avenue, SW
Washington, DC 20202

Dear Secretary Duncan,

On behalf of Venture Philanthropy Partners (VPP), I am pleased to submit this letter of support for the District of Columbia Race to the Top Fund state application. Over the past two years, public education in Washington, D.C. has been at an extraordinary inflection point with community and political leaders supporting dramatic changes to the local education landscape. In the future, we believe that the dynamic reform agenda will continue to be executed and significantly improve educational achievement for District students.

VPP is a nonprofit philanthropic investment organization that helps great leaders build strong, high-performing nonprofit institutions. We concentrate money, expertise, and personal contacts to improve the lives of children and youth of low-income families in the National Capital Region. Since its inception in 2000, VPP has raised over $83 million and completed investment partnerships with 12 well-respected local nonprofit organizations. Of those organizations, VPP has committed over $15 million to high-performing educational programs, including charter schools, afterschool programs, and early childhood development programs to demonstrate creative local solutions to the complex educational issues evident in public education in the region. In November, 2009 VPP launched its second fund with an investment in Year Up. VPP's investment will support Year Up's expansion of the proven model in the National Capital Region, change workplace hiring practices locally and nationally, and influence how governments at all levels support workforce development programs. In our first and second funds, VPP's significant philanthropic investments have played a pivotal role in the community to help develop effective and catalytic approaches that enhance and support local education reform efforts.

Washington, D.C. is uniquely positioned to demonstrate that the Race to the Top Fund can have significant and far-reaching impact on education. Political leaders, educators, and community stakeholders have made educational quality and effectiveness a priority in the District. Complete congruency exists between the Mayor and the Chancellor of Education on the need for comprehensive education reform. In addition to this strong partnership, a historical tentative agreement between DCPS and the Washington Teachers Union positions DCPS to significantly increase teacher compensation and establish a performance pay program that evaluates and rewards teachers based largely on student achievement. The District also has a robust choice education program which provides an array of public school options. Clearly, the Race to the Top Fund would augment and accelerate reform efforts that are in progress and given the close proximity of the District to the U.S. Department of Education, showcase promising programs and initiatives at a national level.

Once again, VPP supports Washington, D.C. in its effort to improve educational opportunities for students through the Race to the Top Fund state award sponsored by the United States Department of Education. In the District of Columbia, educational inequity among children and youth is prevalent, and we believe that effectively increasing educational success in our Nation's Capital would be a beacon for the entire nation.

If you have any questions or need additional information please feel free to contact me at ctcole@vppartners.org or (202) 263-4786.

Sincerely,

Carol Thompson Cole

Carol Thompson Cole
President & CEO

1201 15th Street, NW • Suite 420 • Washington, DC 20005 • Tel 202.955.8085 • Fax 202.955.8087 • www.vppartners.org

Allen L. Sessoms
President

January 11, 2010

Secretary Arne Duncan
U.S. Department of Education
400 Maryland Avenue, S.W.
Washington, DC 20202

Dear Secretary Duncan,

I am pleased to express my support for the District of Columbia's Race to the Top Fund application. District leaders committed to a bold plan to reform our public schools. As the DC application demonstrates, we are firmly committed to ensuring that every child succeeds.

The District is truly ahead of the curve in creating and implementing a visionary education reform agenda. Many of the key components that you are seeking in a successful reform environment are in place in DC. The Chancellor of District of Columbia Public Schools is implementing aggressive and innovative strategies at the classroom, school, and central office levels. As a result, we are seeing significant gains in student achievement, both on the state tests and the recent National Assessment of Educational Progress (NAEP). The District also has a vibrant charter school movement, providing parents across the city quality public school options, and a dedicated initiative to provide quality pre-kindergarten programming for every child. We are ready to take District reforms to the next level, and a Race to the Top Fund award will help accelerate these efforts. The DC application presents a unique opportunity to show that the Race to the Top Fund can have a dramatic impact – the District will serve as a national model for education reform.

The District's reform strategies align well with Race to the Top priorities: a relentless focus on providing an excellent teacher in every classroom and a strong principal in every school; data-driven decision-making; instruction that is tied to rigorous academic standards; and a willingness to intervene in the lowest-achieving schools. The Race to the Top funds will enable the District, over the next four years, to increase the rate of change and create outcomes for students that position the District as a model for state education systems and urban education systems.

University System of the District of Columbia
4200 Connecticut Avenue, NW · Washington, DC 20008 · p: (202) 274-6016 · f: (202) 274-5304 · www.udc.edu

I urge you to consider the DC Race to the Top Fund application favorably. With your support, I am confident the District will lead the country in raising the bar and enabling all of our students to succeed.

Sincerely,

Allen L. Sessoms

Georgetown University

Office of Public Affairs

January 13, 2010

The Honorable Arne Duncan
Secretary, U.S. Department of Education
400 Maryland Avenue SW
Washington, DC 20202

Dear Secretary Duncan:

Georgetown University is pleased to express its support for the District of Columbia's Race to the Top Fund application.

Georgetown University has partnered with the District of Columbia Public Schools for a number of years in a variety of ways and on a number of levels, including, for example, student tutoring programs and faculty-led programs in such academic areas as biology, civic engagement, and foreign language instruction. We are presently working with the school system in developing ways to assess teacher and student performance. It is clear that District leaders are committed to a bold plan to reform our public schools, and –as its application demonstrates – that the leadership of the District of Columbia Public Schools is firmly committed to ensuring that every child succeeds.

The District is truly a national leader in creating and implementing a visionary education reform agenda. Many of the key components that the Department of Education believes must be present in a successful reform environment are in place here in DC. Chancellor Michelle Rhee and her staff are implementing innovative, results-oriented strategies at the classroom, school, curricular, and central office levels. As a result, we have begun to see significant gains in student achievement, both on the state tests and the most recent National Assessment of Educational Progress (NAEP). The District also has a vibrant charter school movement, providing parents across the city with quality public school options, and a dedicated initiative to provide outstanding pre-kindergarten programming for every child. We are ready to take District reforms to the next level, and a Race to the Top Fund award will help accelerate our progress. The DC application presents a unique opportunity to show that the Race to the Top Fund can generate measurable results. I believe it would be catalyzing for school districts across the country to see that the public schools in the District of Columbia – long a source of national shame – can be transformed into a national model for education reform.

Washington DC 20057

The District's reform strategies align well with Race to the Top priorities: a relentless focus on providing an excellent teacher in every classroom and a strong principal in every school; data-driven decision-making; instruction that is tied to rigorous academic standards; and a willingness to intervene in the poorest-performing schools. The Race to the Top funds will enable the District, over the next four years, to build upon our recent progress and launch a generation of DC children for college success.

I respectfully ask you to support the DC Race to the Top Fund application. With this investment from the Department of Education, I am confident that the District of Columbia Public Schools can become an extraordinary urban school system.

Sincerely,

(b)(6)

Daniel R. Porterfield, Ph.D.
Senior Vice President for Strategic Development

AMERICAN UNIVERSITY

WASHINGTON, DC

Cornelius M. P
Pr

January 11, 2010

Secretary Arne Duncan
U.S. Department of Education
400 Maryland Avenue, S.W.
Washington, DC 20202

Dear Secretary Duncan,

I am pleased to express my support for the District of Columbia's Race to the Top Fund application. The local universities and District leaders are committed to a bold plan to reform our public schools. As the DC application demonstrates, we are firmly committed to ensuring that every child succeeds.

The District is truly ahead of the curve in creating and implementing a visionary education reform agenda. Many of the key components that you are seeking in a successful reform environment are in place in DC or under development. The Chancellor of District of Columbia Public Schools is implementing aggressive strategies at the classroom, school, and central office levels that will continue to support DC schoolchildren and result in significant gains in student achievement. The District also has a vibrant charter school movement, providing parents across the city quality public school options, and a dedicated initiative to provide quality pre-kindergarten programming for every child. We are ready to support the District's reforms, and a Race to the Top Fund award will help accelerate these efforts. The DC application presents a unique opportunity to show that the Race to the Top Fund can have a dramatic impact – the District will serve as a national model for education reform.

The District's reform strategies are well aligned with Race to the Top priorities: a relentless focus on providing an excellent teacher in every classroom and a strong principal in every school; data-driven decision-making; instruction that is tied to rigorous academic standards; and a willingness to intervene in the lowest-achieving schools. The Race to the Top funds will enable the District, over the next four years, to increase the rate of change and create outcomes for students that position the District as a model for state education systems and urban education systems.

I urge you to consider the DC Race to the Top Fund application favorably. With your support, I am confident the District will lead the country in raising the bar and enabling all of our students to succeed.

Sincerely,

Cornelius M. Kerwin
President

THE GEORGE WASHINGTON UNIVERSITY
WASHINGTON D.C.

STEVEN KNAPP
PRESIDENT

May 27, 2010

Arne Duncan
Secretary
U.S. Department of Education
400 Maryland Avenue, S.W.
Washington, DC 20202

Dear Secretary Duncan,

On behalf of the George Washington University, I write in strong support of the District of Columbia's Race to the Top Fund application.

Under the leadership of Chancellor Michelle Rhee, the District is engaged in an aggressive school reform plan. Significant gains in student performance have already been achieved, both on the state tests and in the recent National Assessment of Educational Progress. The District's reform strategies align well with the Race to the Top priorities, and the support of this innovative program would play a vital role in transforming the District into a model of urban education.

We at George Washington are proud of our educational collaboration with the District. Our partnerships include active engagement with the School Without Walls, located in the midst of our Foggy Bottom Campus, and with the Duke Ellington School of the Performing Arts, where members of our faculty frequently serve as teachers. Last fall, we launched a program that enables students in the School Without Walls to graduate simultaneously with high school diplomas and associate degrees from the university. Throughout the District, our Graduate School of Education and Human Development offers free graduate instruction and research expertise to teachers and administrators. Our students also serve the schools by providing thousands of hours as mentors and tutors. In short, George Washington has a vested interest in the success of the DC Public Schools, and we stand ready to do even more.

With thanks for your favorable consideration of the District's application,

Sincerely,

Steven Knapp

2121 EYE STREET, NW • WASHINGTON, DC 20052 • 202-994-6500 • FAX 202-994-0654

DISTRICT OF COLUMBIA
COLLEGE ACCESS PROGRAM

1029 VERMONT AVENUE, NW SUITE 400 WASHINGTON, D.C. 20005
PHONE: (202) 783-7933 · FAX: (202) 783-7939 · WWW.DCCAP.ORG

Changing lives by giving every child a chance at a college education.

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The Summit Fund of Washington

Adrian M. Fenty, Mayor
District of Columbia

President & CEO

Argelia Rodriguez
DC College Access Program

A United Way member Agency #8118
A CFC Member Agency #35078

April 28, 2010

The Honorable Arne Duncan
Secretary
U. S. Department of Education
400 Maryland Avenue, SW
Washington, DC 20202

Dear Secretary Duncan:

On behalf of the District of Columbia College Access Program (DC-CAP), we are please to give our total support to the District of Columbia's Race to the Top Fund application. Since the inception of DC-CAP eleven years ago, the partnership between DC-CAP and the District of Columbia has been one centered on one over-arching goal: to increase the number of DC Public and Charter High School students enrolling in college and the number who successfully graduate from college. To date this partnership has been instrumental in increasing college enrollment from approximately 30% to 60% and the college graduation numbers have tripled.

The partnership formed by DC-CAP and the District of Columbia is one of the unique reforms initiated to address the many factors that limit students who aspire to a college education. Under the District's leadership, its Chancellor of Schools, public and charter school administrators and faculties, there is an increased commitment to tackle the systemic problems that have hindered students from achieving their dreams of a college degree. In addition, there are a growing number of parents, students, and other organizations who are supportive of the reform environment which exists today and aspire for more.

With all of these community partners poised to make and / or support comprehensive, systemic changes to the DC school system, this is an ideal time for the District to receive additional resources that will allow it to become the national model for a comprehensive urban school system. Please help the District to maintain the momentum it has generated from the reforms that are underway and to initiate more reforms as needed to complete the transformation to being viewed as a model which should be emulated nationwide.

With a comprehensive reform plan, committed leadership, able community partners, and parent and student cooperation the District of Columbia is at the precipice of major educational changes but without assistance from Race to the Top the obstacles will become more formidable. DC-CAP is urging you to consider the District of Columbia's Race to the Top Fund application favorably. With your support, DC-CAP is confident the District will continue to foster and enhance its efforts to embark on systemic changes for the advancement of the education of its students.

Sincerely,

Argelia Rodriguez
President & CEO
DC College Access Program (DC-CAP)

Battelle
The Business of Innovation

May 21, 2010

Ms. Cate Swinburn
President and Executive Director
DC Public Education Fund
1534 14th St NW
Washington, DC, 20005

Donor's Objectives in Support of:
STEM Education in District of Columbia Public Schools

Dear Ms. Swinburn:

We are pleased to inform you that Battelle and the Governing Committee of the Columbus Foundation have approved a grant investment of $50,000 from the Battelle Foundation Fund payable to the DC Public Education Fund on or before June 4, 2010. These funds are intended to help accelerate your existing efforts within District of Columbia Public Schools regarding planning and design phases of two STEM education projects: H.D. Woodson STEM High School conversion and six Catalyst STEM K-8 schools.

The grant investment will be distributed to the DC Public Education Fund, currently acting as fiscal sponsor on behalf of the District of Columbia Public Schools (DCPS). This grant is restricted for use associated with the H.D. Woodson High School and STEM Catalyst schools projects.

This donor letter provides information regarding our interest and support of your current efforts, and specific guidelines for the use of these funds.

Background

Battelle – a charitable trust in the state of Ohio – was founded more than 80 years ago with the mission to manage scientific discovery and convert knowledge in practice applications of benefit to society and our economy. Over that period, we have contributed to some of the most important technological advances in support of national security, health, and energy. Battelle reinvests a portion of income from its global operating businesses to advancing the quality of education. Support is provided across a spectrum from early childhood through college scholarships, but the focus of Battelle is on improving science, technology, engineering, and mathematics (STEM) education. This is accomplished through deliberate formation of public/private partnerships with educators, school districts, businesses, foundations and state educators across the United States, with attention to students and populations historically underserved by the nation's public education systems.

Battelle, and many of the organizations we collaborate with, employ thousands of scientists and engineers. We have a strong interest in stimulating the next-generation of young people to pursue technology-related careers. But more importantly, Battelle recognizes the value of solid STEM as a foundation for success in any pursuit in life. This is underscored *in the will of Gordon Battelle, Item* 21st *"...improving the education of men and women to better prepare* them for employment" and has been included in Battelle's "Mission and Core Purposes" since its inception in 1929.

A primary operating principle in Battelle's engagement with STEM education is harnessing networks of partners to accelerate the progress of the work to improve teacher effectiveness and its impact on students. To that end, there is early but promising results from work in Ohio and in several other states.

505 King Avenue Columbus, Ohio 43201 614-424-5901 www.battelle.org

Networks have rapidly created new schools through knowledge and talent sharing across districts, industry lines, and most recently across states. (See www.OSLN.org and Tennessee's Race to the Top application to the United States Department of Education pages 39, 117, and 147-149 at http://www2.ed.gov/programs/racetothetop/phase1-applications/tennessee.pdf for examples.) Given our strong interest in STEM and the presence of a Battelle operating location in the D.C. area, a dialogue was initiated with DCPS about potential areas of mutual interest.

Conversations between DCPS and Battelle

The District of Columbia Public Schools is pursuing the pilot of two STEM projects beginning in the Fall 2010: (1) STEM demonstration school, H.D. Woodson (open Fall 2011), and (2) Six STEM Catalyst Project schools focused on innovative practices, scalability, and sustainability (opening Fall 2010). In support of these projects, DCPS has committed two STEM Coordinators charged with the planning, hiring, and training of both teachers and administrators associated with these projects. DCPS has also received substantial support from the private sector that may defray any additional costs associated with initiating and implementing these programs, thus alleviating any unnecessary burden to the system. DCPS views its STEM commitment as an important component of the District's strategic objectives for providing innovative pathways for engaging underrepresented students in the STEM fields, and providing college readiness tools for successful enrollment and completion.

In early 2010, representatives from Battelle visited with DCPS staff in D.C. to explore opportunities of mutual interest. During that first meeting, we learned more about the plans for two STEM projects, H.D. Woodson High School conversion project and the Catalyst Schools project that consisted of six themed K-8 schools.

These discussions led to a March 1, 2010 visit to Cleveland, Ohio to the Metropolitan Cleveland Consortium STEM High School where DCPS staff and Battelle representatives visited with administrators, faculty, students and consultants associated with the design and operation of the school. The Cleveland school is part of the Ohio STEM Learning Network and much of its design/development was accomplished through its connection to other resources across the state and with Battelle.

Rationale for Grant Investment

There are hundreds of examples of strong STEM programs and schools across the country. Unfortunately, few have scaled to any level of significance beyond their own borders or are able to help new initiatives like that in D.C. Some practices are transferrable; others are specific to the local environment where the schools were created. But a common issue for those charged with STEM initiatives in their districts (whether it is developing new schools, curriculum, or teaching programs) is efficiently finding, accessing, and collaborating with relevant partners.

Battelle's work in multiple states and with leaders in STEM education creates an avenue for DCPS to accelerate progress during the early stages of its work. As you pursue planning for the DCPS STEM projects, the grant investment from Battelle is aimed at adding resources to ensure that administrative and teaching staff of D.C. public schools has the opportunity to investigate, learn, and connect to relevant resources. Battelle's education staff will also work closely with DCPS to help you access examples of effective STEM teaching and learning across the country.

The visit in March to the Metropolitan Cleveland Consortium STEM High School (MC^2 STEM HS) in Cleveland, Ohio is a preview of the personnel and resources within the various State STEM networks that Battelle wishes to make accessible to the DCPS design and planning teams. In addition, Battelle intends

to be closely engaged as a design collaborator to explore possibilities for deeper engagement in public/private partnerships with DCPS that could accelerate STEM education in the nation's capital.

Guidelines and Commitments

In support of the DCPS STEM initiatives, Battelle is providing DCPS with a $50,000 grant investment and will facilitate and coordinate access to technical assistance from the Ohio STEM Learning Network's in-residence staff and other collaborators connected to Battelle including Battelle Affiliated National Laboratories, Battelle Ventures, Battelle Corporate Offices, and the larger Battelle Network of STEM resources.. The grant and support aim to accelerate DCPS leadership effectiveness in the early planning, design and implementation of the Woodson STEM High School and the Catalyst STEM Schools by:

- Accelerating the learning curve for DCPS leaders and teachers and administrative staff through visits to STEM demonstration sites, teacher training, and administrative support.
- Facilitating dialogue with district staff and other key contributors to develop a cohesive and shared vision for STEM education throughout the District.
- Facilitating dialogue about what is known regarding critical "pre-conditions" among partners and communities that set the foundation for effective public/private STEM partnerships, and assisting the DCPS strategy team to increase their knowledge about best practices, early challenges, effective STEM communication strategy, and barriers to success.
- Supporting the preparation of a design plan for the Woodson High School that leverages its unique proximity to D.C. area STEM-rich workplace sites.
- Using grant funds to purchase relevant curriculum materials.

As it is the intent of Battelle and DCPS to leverage this short-term effort into a long-term partnership, Battelle will work with DCPS to develop a plan for establishment of the partnership that will include the foundation for a longer-term D.C. strategic plan. If the partnership is agreed to by DCPS and Battelle, Battelle will work closely with DCPS in the start-up phase of the development to ensure its success. As part of the dialog and development that this grant supports, Battelle will coordinate with DCPS so that when the partnership is formed, a mutually-agreed to person will be ready to function as the director/executive coordinator for this partnership. Such a person will focus on providing support to the assigned DCPS staffers, the STEM schools, and the partnership as a whole when it grows, as well as provide connectivity to the Battelle Enterprise. That person, and other to-be-determined requirements that will enable the partnership, will be supported by Battelle through the partnership and until such time that the partnership is firmly established and sustaining.

Battelle understands that the DC Public Education Fund is a 501(c)(3) and will be the fiscal sponsor on behalf of the DCPS. If either the DC Public Education Fund or DCPS is unable to carry out this work due to bankruptcy, a legal matter that interrupts services, loss of key personnel or capability, or other material issues that impact your operations relating to this grant, you must notify Battelle immediately (not later than ten working days) of these circumstances. If the circumstances are not temporary, Battelle will work with the DC Public Education Fund to redirect the remaining funds and find satisfactory alternatives for continuing technical assistance to HD Woodson STEM High School and the six STEM Catalyst Schools. This could include authorizing transfer of all unexpended restricted funds to another qualifying organization to continue the delivery of grant services to the extent practical.

Reporting Requirements

A brief letter summarizing the activities that were supported by the grant investment is requested no later than December 31, 2010 or a date selected by the Battelle contact for this work. Of particular interest to Battelle is documenting what resources and people you were able to benefit from in the course of your work, as well as lessons learned and constructive feedback from these interactions.

Continued Collaboration Discussions

The District of Columbia is surrounded by a number of federal agencies and laboratories involved with setting and carrying out scientific activities of national significance. DCPS is in a unique geography, positioning it as a premiere location to advance the DCPS STEM education agenda by engaging with these scientific assets. These relationships take time to explore but can be a cornerstone in adding real-world relevance to STEM teaching and learning. To that end, concurrent with the guidelines noted earlier, Battelle is interested to work closely with the District of Columbia Public Schools to explore broader partnership opportunities. These opportunities would begin with Battelle, but anticipated to expand as appropriate to include community organizations, other school districts, regional universities, businesses, federal agencies and laboratories, and national education support and learning networks.

The day-to-day point of contact for coordination with Battelle will be Michael Kelly, a Vice President in Battelle's Crystal City Operations.

We look forward to supporting the upcoming work with DCPS and the benefit it will have on children in the District of Columbia area.

Best regards,

Richard D. Rosen
Corporate Vice President, Education and Philanthropy, Battelle
Executive Director, Ohio STEM Learning Network

RDR\ejp

CC: Mr. Michael Kelly
Vice President
Battelle Crystal City Operations

CC: Dr. Desmond Stubbs
Scientist-in-Residence
The Ohio STEM Learning Network

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Guidelines Understood and Accepted by DC Public Education Fund and Battelle

DC PUBLIC EDUCATION FUND	BATTELLE MEMORIAL INSTITUTE
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Date: 5/24/10	Date: May 21, 2010

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Appendix A3.1

TUDA Summary Reports

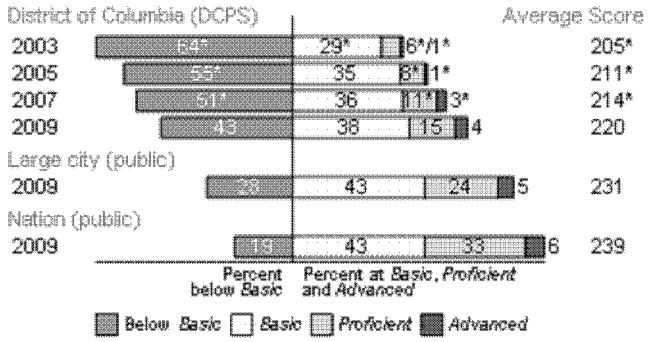
The Nation's Report Card Mathematics 2009

TUDA Snapshot Report

Overall Results

- In 2009, the average score of fourth-grade students in District of Columbia was 220. This was lower than the average score of 231 for public school students in large cities.
- The average score for students in District of Columbia in 2009 (220) was higher than their average score in 2007 (214) and was higher than their average score in 2003 (205).
- In 2009, the score gap between students in District of Columbia at the 75th percentile and students at the 25th percentile was 44 points. This performance gap was wider than that of 2003 (38 points).
- The percentage of students in District of Columbia who performed at or above the NAEP *Proficient* level was 19 percent in 2009. This percentage was greater than that in 2007 (14 percent) and was greater than that in 2003 (7 percent).
- The percentage of students in District of Columbia who performed at or above the NAEP *Basic* level was 57 percent in 2009. This percentage was greater than that in 2007 (49 percent) and was greater than that in 2003 (36 percent).

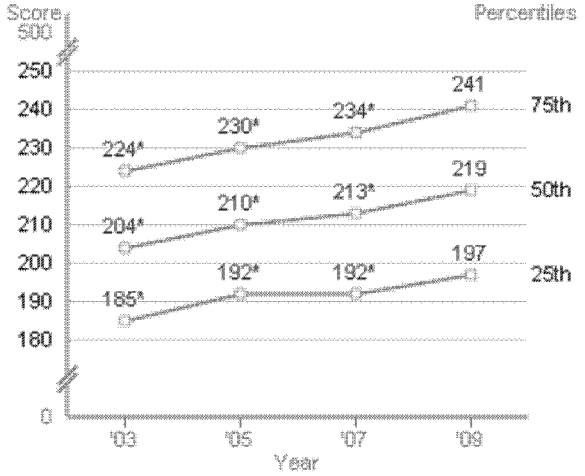
Achievement-Level Percentages and Average Score Results



* Significantly different ($p < .05$) from district's results in 2009.

NOTE: Detail may not sum to totals because of rounding.

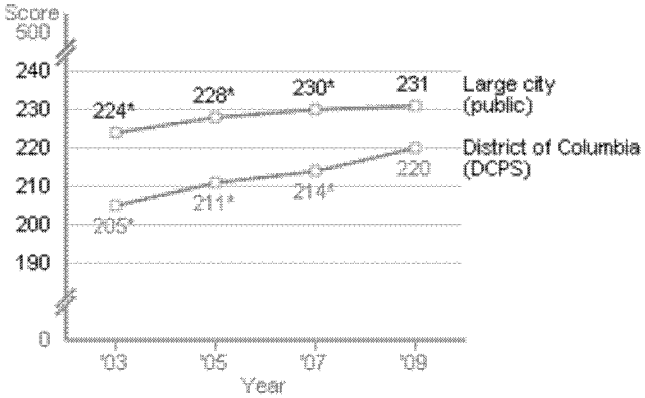
Scores at Selected Percentiles



* Significantly different ($p < .05$) from 2009.

NOTE: Scores at selected percentiles on the NAEP mathematics scale indicate how well students at lower, middle, and higher levels performed.

Average Scores for District and Large Cities



* Significantly different ($p < .05$) from 2009.

Results for Student Groups in 2009

Reporting Groups	Percent of students	Avg. score	Percentages at or above *Basic*	Percentages at or above *Proficient*	Percent at *Advanced*
Gender					
Male 51		218	55	19	4
Female	49	222	59	18	4
Race/Ethnicity					
White 9		270	99	81	33
Black 77		212	49	9	#
Hispanic 12		227	69	25	2
Asian/Pacific Islander	2	‡	‡	‡	‡
American Indian/Alaska Native	#	‡	‡	‡	‡
National School Lunch Program					
Eligible 72		210	47	8	#
Not eligible	27	245	83	46	14

Rounds to zero. ‡ Reporting standards not met.

NOTE: Detail may not sum to totals because of rounding, and because the "Information not available" category for the National School Lunch Program, which provides free/reduced-price lunches, and the "Unclassified" category for race/ethnicity are not displayed.

Score Gaps for Student Groups

- In 2009, female students in District of Columbia had an average score that was not significantly different from that of male students.
- In 2009, Black students had an average score that was 58 points lower than that of White students. This performance gap was not significantly different from that in 2003 (60 points).
- In 2009, Hispanic students had an average score that was 43 points lower than that of White students. This performance gap was narrower than that in 2003 (57 points).
- In 2009, students who were eligible for free/reduced-price school lunch, an indicator of low income, had an average score that was 35 points lower than that of students who were not eligible for free/reduced-price school lunch. This performance gap was wider than that in 2003 (21 points).

NOTE: DCPS = District of Columbia Public Schools. Statistical comparisons are calculated on the basis of unrounded scale scores or percentages.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), various years, 2003–2009 Mathematics Assessments.

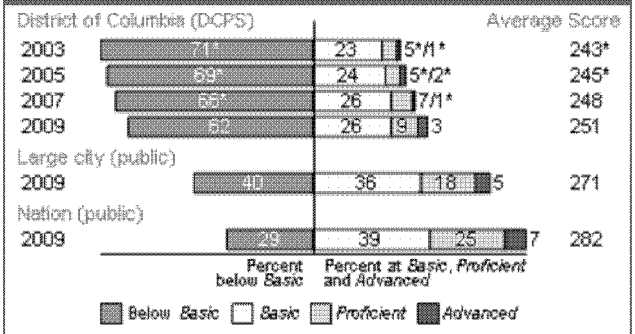
The Nation's Report Card Mathematics 2009

TUDA Snapshot Report

Overall Results

- In 2009, the average score of eighth-grade students in District of Columbia was 251. This was lower than the average score of 271 for public school students in large cities.
- The average score for students in District of Columbia in 2009 (251) was not significantly different from their average score in 2007 (248) and was higher than their average score in 2003 (243).
- The overall score in 2009 (251) was higher than in 2007 when the 2007 average score is recomputed to exclude charter schools (244) to account for the change in population definition for 2009.
- In 2009, the score gap between students in District of Columbia at the 75th percentile and students at the 25th percentile was 54 points. This performance gap was not significantly different from that of 2003 (48 points).
- The percentage of students in District of Columbia who performed at or above the NAEP *Proficient* level was 12 percent in 2009. This percentage was greater than that in 2007 (8 percent) and was greater than that in 2003 (6 percent).
- The percentage of students in District of Columbia who performed at or above the NAEP *Basic* level was 38 percent in 2009. This percentage was greater than that in 2007 (34 percent) and was greater than that in 2003 (29 percent).

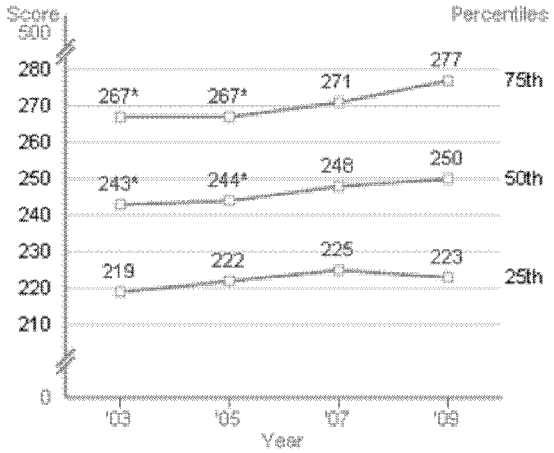
Achievement-Level Percentages and Average Score Results



* Significantly different ($p < .05$) from district's results in 2009.

NOTE: Detail may not sum to totals because of rounding.

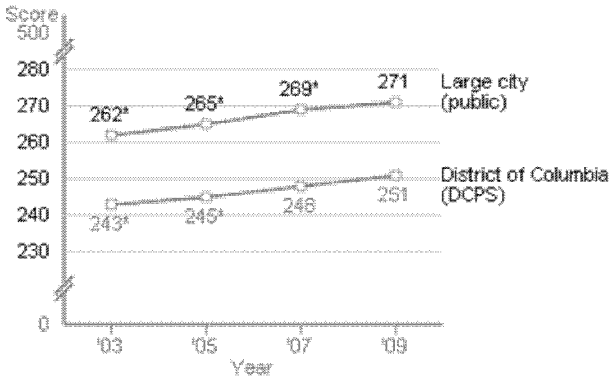
Scores at Selected Percentiles



* Significantly different ($p < .05$) from 2009.

NOTE: Scores at selected percentiles on the NAEP mathematics scale indicate how well students at lower, middle, and higher levels performed.

Average Scores for District and Large Cities



* Significantly different ($p < .05$) from 2009.

Results for Student Groups in 2009

Reporting Groups	Percent of students	Avg. score	Percentages at or above *Basic*	Percentages at or above *Proficient*	Percent at *Advanced*
Gender					
Male 4	8	248	36	12	3
Female	52	254	40	12	4
Race/Ethnicity					
White 5		‡	‡	‡	‡
Black 8	2	244	32	6	#
Hispanic 1	1	263	56	17	2
Asian/Pacific Islander	2	‡	‡	‡	‡
American Indian/Alaska Native	#	‡	‡	‡	‡
National School Lunch Program					
Eligible 7	5	243	31	6	1
Not eligible	25	276	61	29	12

Rounds to zero. ‡ Reporting standards not met.

NOTE: Detail may not sum to totals because of rounding, and because the "Information not available" category for the National School Lunch Program, which provides free/reduced-price lunches, and the "Unclassified" category for race/ethnicity are not displayed.

Score Gaps for Student Groups

- In 2009, female students in District of Columbia had an average score that was not significantly different from that of male students.
- Data are not reported for White students in 2009, because reporting standards were not met.
- Data are not reported for White students in 2009, because reporting standards were not met.
- In 2009, students who were eligible for free/reduced-price school lunch, an indicator of low income, had an average score that was 33 points lower than that of students who were not eligible for free/reduced-price school lunch. This performance gap was wider than that in 2003 (18 points).

NOTE: Beginning in 2009, if the results for charter schools are not included in the school district's Adequate Yearly Progress (AYP) report to the U.S. Department of Education under the Elementary and Secondary Education Act, they are excluded from that district's TUDA results. DCPS = District of Columbia Public Schools. Statistical comparisons are calculated on the basis of unrounded scale scores or percentages.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), various years, 2003–2009 Mathematics Assessments.

Reading 2009

Trial Urban District Snapshot Report

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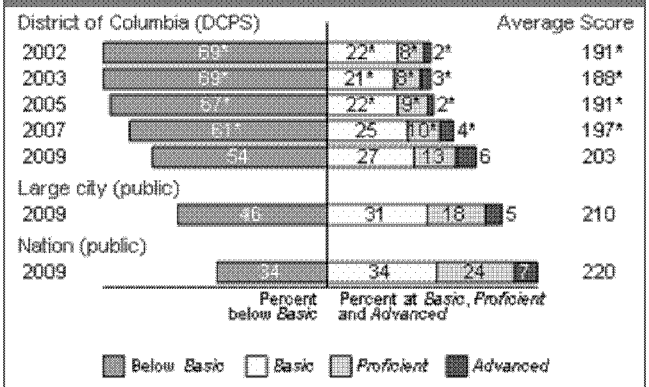
The Nation's Report Card

Overall Results

- In 2009, the average score of fourth-grade students in District of Columbia was 203. This was lower than the average score of 210 for public school students in large cities.
- The average score for students in District of Columbia in 2009 (203) was higher than their average score in 2007 (197) and was higher than their average score in 2002 (191).
- In 2009, the score gap between students in District of Columbia at the 75th percentile and students at the 25th percentile was 51 points. This performance gap was not significantly different from that of 2002 (48 points).
- The percentage of students in District of Columbia who performed at or above the NAEP *Proficient* level was 18 percent in 2009. This percentage was greater than that in 2007 (14 percent) and was greater than that in 2002 (10 percent).
- The percentage of students in District of Columbia who performed at or above the NAEP *Basic* level was 46 percent in 2009. This percentage was greater than that in 2007 (39 percent) and was greater than that in 2002 (31 percent).

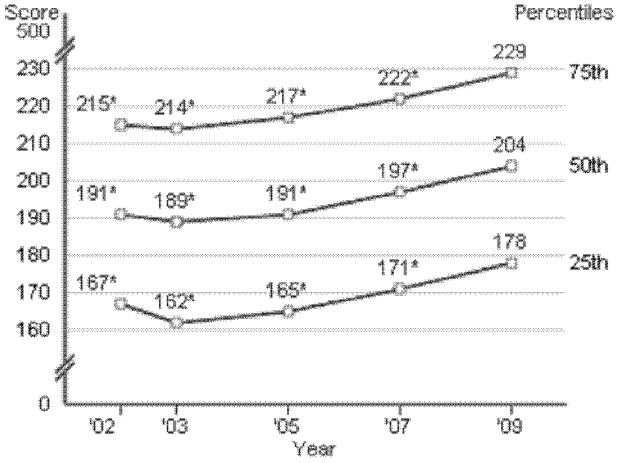
Achievement-Level Percentages and Average Score Results



* Significantly different ($p < .05$) from district's results in 2009.

NOTE: Detail may not sum to totals because of rounding. Large cities are located in the urbanized areas of cities with populations of 250,000 or more.

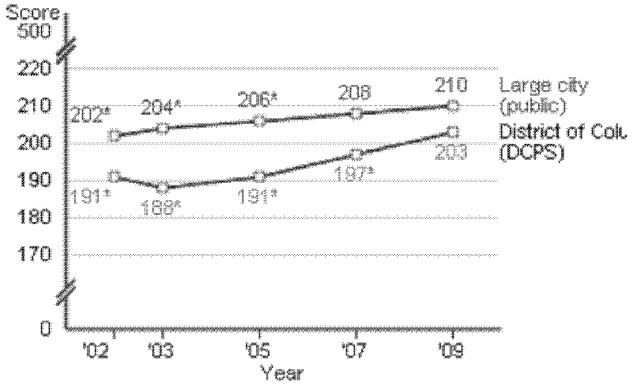
Scores at Selected Percentiles



* Significantly different ($p < .05$) from 2009.

NOTE: Scores at selected percentiles on the NAEP reading scale indicate how well students at lower, middle, and higher levels performed.

Average Scores for District and Large Cities



* Significantly different ($p < .05$) from 2009.

Results for Student Groups in 2009

Reporting Groups	Percent of students	Avg. score	Percentages at or above *Basic*	Percentages at or above *Proficient*	Percent at *Advanced*
Gender					
Male	48	200	43	18	6
Female	52	207	48	18	5
Race/Ethnicity					
White	9	257	95	75	37
Black	76	195	38	11	2
Hispanic	13	207	50	17	4
Asian/Pacific Islander	2	‡	‡	‡	‡
American Indian/Alaska Native	#	‡	‡	‡	‡
National School Lunch Program					
Eligible	70	193	34	9	1
Not eligible	29	230	73	43	17

\# Rounds to zero. ‡ Reporting standards not met.

NOTE: Detail may not sum to totals because of rounding, and because the "Information not available" category for the National School Lunch Program, which provides free/reduced-price lunches, and the "Unclassified" category for race/ethnicity are not displayed.

Score Gaps for Student Groups

- In 2009, female students in District of Columbia had an average score that was higher than that of male students.
- In 2009, Black students had an average score that was 62 points lower than that of White students. This performance gap was not significantly different from that in 2002 (60 points).
- In 2009, Hispanic students had an average score that was 50 points lower than that of White students. This performance gap was not significantly different from that in 2002 (55 points).
- In 2009, students who were eligible for free/reduced-price school lunch, an indicator of low income, had an average score that was 38 points lower than that of students who were not eligible for free/reduced-price school lunch. This performance gap was wider than that in 2002 (25 points).

NOTE: DCPS = District of Columbia Public Schools. Statistical comparisons are calculated on the basis of unrounded scale scores or percentages.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), various years, 2002–2009 Reading Assessments.

Reading 2009

Trial Urban District Snapshot Report

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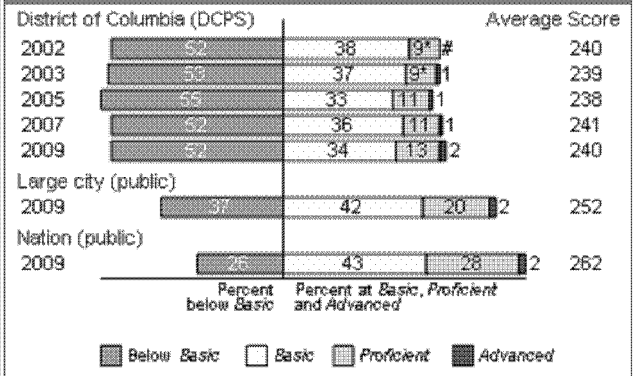
Overall Results

- In 2009, the average score of eighth-grade students in District of Columbia was 240. This was lower than the average score of 252 for public school students in large cities.
- The average score for students in District of Columbia in 2009 (240) was not significantly different from their average score in 2007 (241) and was not significantly different from their average score in 2002 (240).
- In 2009, the score gap between students in District of Columbia at the 75th percentile and students at the 25th percentile was 53 points. This performance gap was not significantly different from that of 2002 (44 points).
- The percentage of students in District of Columbia who performed at or above the NAEP *Proficient* level was 14 percent in 2009. This percentage was not significantly different from that in 2007 (12 percent) and was greater than that in 2002 (10 percent).
- The percentage of students in District of Columbia who performed at or above the NAEP *Basic* level was 48 percent in 2009. This percentage was not significantly different from that in 2007 (48 percent) and was not significantly different from that in 2002 (48 percent).

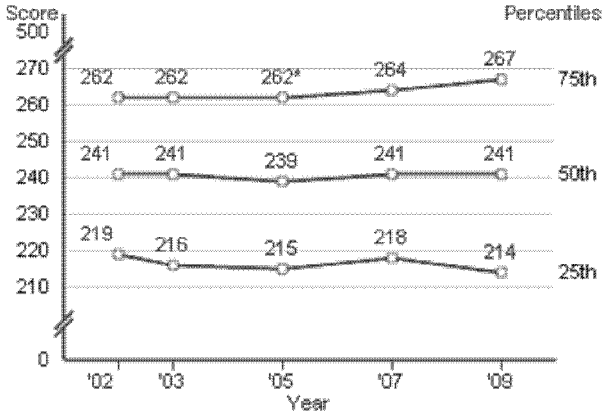
Achievement-Level Percentages and Average Score Results



* Significantly different ($p < .05$) from district's results in 2009.
\# Rounds to zero.

NOTE: Detail may not sum to totals because of rounding. Large cities are located in the urbanized areas of cities with populations of 250,000 or more.

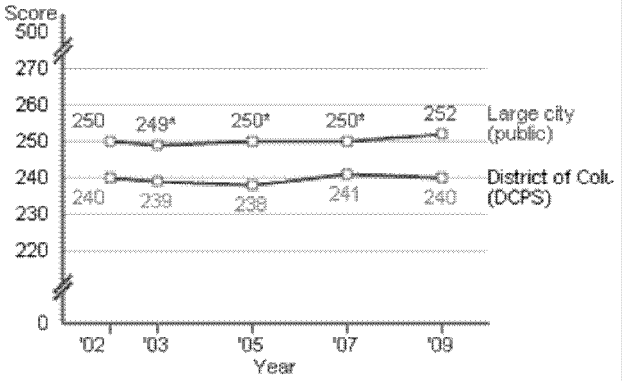
Scores at Selected Percentiles



* Significantly different ($p < .05$) from 2009.

NOTE: Scores at selected percentiles on the NAEP reading scale indicate how well students at lower, middle, and higher levels performed.

Average Scores for District and Large Cities



* Significantly different ($p < .05$) from 2009.

Results for Student Groups in 2009

Reporting Groups	Percent of students	Avg. score	Percentages at or above *Basic*	Percentages at or above *Proficient*	Percent at *Advanced*
Gender					
Male	50	233	41	11	2
Female	50	248	56	18	2
Race/Ethnicity					
White	5	‡	‡	‡	‡
Black	84	235	43	9	#
Hispanic	9	249	62	22	1
Asian/Pacific Islander	2	‡	‡	‡	‡
American Indian/Alaska Native	#	‡	‡	‡	‡
National School Lunch Program					
Eligible	73	232	40	8	#
Not eligible	26	263	71	34	7

\# Rounds to zero. ‡ Reporting standards not met.

NOTE: Detail may not sum to totals because of rounding, and because the "Information not available" category for the National School Lunch Program, which provides free/reduced-price lunches, and the "Unclassified" category for race/ethnicity are not displayed.

Score Gaps for Student Groups

- In 2009, female students in District of Columbia had an average score that was higher than that of male students.
- Data are not reported for White students in 2009, because reporting standards were not met.
- Data are not reported for White students in 2009, because reporting standards were not met.
- In 2009, students who were eligible for free/reduced-price school lunch, an indicator of low income, had an average score that was 30 points lower than that of students who were not eligible for free/reduced-price school lunch. This performance gap was wider than that in 2002 (17 points).

NOTE: Beginning in 2009, if the results for charter schools are not included in the school district's Adequate Yearly Progress (AYP) report to the U.S. Department of Education under the Elementary and Secondary Education Act, they are excluded from that district's TUDA results. DCPS = District of Columbia Public Schools. Statistical comparisons are calculated on the basis of unrounded scale scores or percentages.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), various years, 2002–2009 Reading Assessments.

Appendix A3.2

NAEP & ESEA (DC-CAS) Data

A3(ii)(a) – Historical ESEA and NAEP Results

STATEWIDE ESEA RESULTS – Percent of Students Scoring Proficient or Advanced (2003 – 2009)								
	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**Percentage Point Proficiency Gain ('06 – '09)**
Reading	35.5%	37.4%	39.8%	34.6%	36.2%	42.7%	45.3%	**10.7**
Math	43.4%	45.5%	45.3%	26.1%	31.1%	39.6%	44.8%	**18.6**
* The DC-CAS test was first implemented in the 2005-2006 school year Source: OSSE website: www.nclb.osse.dc.gov								

STATEWIDE NAEP SCORES (2003 – 2009)						
	2003	**2005**	**2007**	**2009**	**4 Year Gain**	**6 Year Gain**
4th Grade Reading	188	191	197	202	**9**	**14**
4th Grade Math	205	211	214	219	**9***	**14**
8th Grade Reading	239	238	241	242	**2**	**3**
8th Grade Math	243	245	248	254	**5**	**11**
* D.C. had the highest 4 year gain for 4th Grade Math of any state in the U.S. between 2005-2009 Source: National Assessment of Educational Progress: http://nces.ed/gov/nationsreportcard/naepdata/						

A3(ii)(a) – Historical ESEA Results by Subgroup

ESEA RESULTS by Subgroup –Reading – Percent of Students Scoring Proficient or Advanced (2003 – 2009)								
	2003	2004	2005	2006	2007	2008	2009	Percentage Point Proficiency Gain ('06 – '09)
Race/Ethnicity								
Asian/Pacific Islanders	49.9%	54.0%	57.1%	61.7%	65.4%	67.6%	74.1%	**12.4**
Black/Non-Hispanic	33.9%	35.5%	37.6%	31.5%	32.7%	39.3%	41.8%	**10.3**
Hispanic	32.0%	34.4%	40.8%	39.5%	39.9%	47.0%	48.7%	**9.2**
Amer. Indian/Alaskan Native	41.7%	50.0%	**	53.3%	55.0%	**	75.0%	**21.7**
White/Non-Hispanic	81.5%	83.3%	83.1%	84.4%	86.9%	88.0%	87.6%	**3.2**
Gender								
Female	39.7%	41.2%	44.0%	39.5%	41.0%	48.2%	50.7%	**11.2**
Male	31.5%	33.7%	36.1%	29.8%	31.4%	37.3%	39.9%	**10.1**
SPED								
Disabled	8.2%	12.0%	16.0%	11.9%	14.6%	20.3%	18.4%	**6.4**
Non-disabled	41.8%	43.7%	46.2%	40.2%	41.4%	47.6%	51.4%	**11.2**
English Proficiency								
LEP/NEP	21.7%	20.5%	37.2%	31.4%	33.6%	38.8%	44.7%	**13.3**
Non-LEP/NEP	36.5%	38.8%	40.3%	34.8%	36.7%	43.4%	45.4%	**10.6**
Econ. Status								
Econ. Disadvantaged	32.2%	33.4%	37.4%	29.5%	31.1%	37.3%	39.9%	**10.4**
Non-Econ. Disadvantaged	40.4%	45.2%	45.3%	44.0%	44.9%	53.1%	57.8%	**13.9**
STATE Total:	**35.5%**	**37.4%**	**39.8%**	**34.6%**	**36.2%**	**42.7%**	**45.3%**	**10.7**

* The DC-CAS test was first implemented in the 2005-2006 school year

** Data are not available due to inadequate sample size

Source: OSSE website: www.nclb.osse.dc.gov

A3(ii)(a) – Historical ESEA Results by Subgroup

ESEA RESULTS by Subgroup – Math – Percent of Students Scoring Proficient or Advanced (2003 – 2009)								
	2003	2004	2005	2006	2007	2008	2009	Percentage Point Proficiency Gain ('06 – '09)
Race/Ethnicity								
Asian/Pacific Islanders	80.2%	82.1%	82.0%	65.5%	73.3%	78.1%	86.5%	**20.9**
Black/Non-Hispanic	41.0%	42.9%	42.0%	22.7%	27.2%	35.5%	40.5%	**17.8**
Hispanic	46.5%	50.7%	56.6%	31.5%	36.9%	48.1%	53.4%	**22.0**
Amer. Indian/Alaskan Native	45.8%	55.0%	**	33.3%	50.0%	**	75.0%	**41.7**
White/Non-Hispanic	82.8%	85.5%	84.4%	79.7%	82.2%	86.1%	86.0%	**6.3**
Gender								
Female	46.9%	49.1%	48.4%	27.6%	32.8%	41.7%	46.9%	**19.3**
Male	40.2%	42.3%	42.5%	24.7%	29.3%	37.6%	42.6%	**17.9**
SPED								
Disabled	9.0%	11.9%	15.8%	7.5%	10.2%	16.0%	16.9%	**9.5**
Non-disabled	51.4%	53.9%	53.2%	30.7%	36.1%	44.8%	51.0%	**20.3**
English Proficiency								
LEP/NEP	42.8%	47.5%	59.4%	26.8%	33.9%	43.1%	53.0%	**26.1**
Non-LEP/NEP	43.5%	46.1%	44.7%	26.1%	31.2%	39.7%	43.9%	**17.9**
Econ. Status								
Econ. Disadvantaged	41.4%	42.8%	43.9%	21.3%	26.3%	34.7%	40.1%	**18.8**
Non-Econ. Disadvantaged	46.6%	50.9%	48.6%	35.1%	39.3%	49.1%	55.6%	**20.5**
STATE Total:	**43.4%**	**45.5%**	**45.3%**	**26.1%**	**31.1%**	**39.6%**	**44.8%**	**18.6%**

* The DC-CAS test was first implemented in the 2005-2006 school year

** Data are not available due to inadequate sample size

Source: OSSE website: www.nclb.osse.dc.gov

A3(ii)(a) – Historical ESEA Results by Subgroup and School Level

ESEA RESULTS - Elementary Reading - Percent of Students Scoring Proficient or Advanced (2003-2009)								
	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**Percentage Point Proficiency Gain ('06 – '09)**
Race/Ethnicity								
Asian/Pacific Islanders	63.7%	72.9%	73.6%	65.7%	66.9%	73.6%	75.7%	**10.0**
Black/Non-Hispanic	41.8%	44.0%	48.0%	33.8%	34.1%	41.4%	43.7%	**9.9**
Hispanic	41.7%	43.8%	51.1%	41.2%	44.1%	50.7%	49.4%	**8.2**
White/Non-Hispanic	90.8%	88.8%	88.0%	86.7%	84.7%	87.7%	90.3%	**3.6**
Gender								
Female	48.5%	49.9%	54.6%	41.5%	42.8%	50.9%	52.9%	**11.4**
Male	39.8%	42.6%	46.5%	32.8%	33.8%	40.2%	42.7%	**9.9**
SPED								
Disabled	13.1%	17.6%	24.8%	15.4%	18.2%	25.9%	23.4%	**8.0**
English Proficiency								
LEP/NEP	29.9%	31.3%	50.1%	36.7%	40.3%	45.9%	48.0%	**11.3**
Econ. Status								
Econ. Disadvantaged	38.9%	41.0%	46.3%	31.4%	33.2%	39.9%	41.4%	**10.0**
STATE Total:	**44.1%**	**46.2%**	**50.6%**	**37.2%**	**38.2%**	**45.5%**	**47.8%**	**10.6**

* The DC-CAS test was first implemented in the 2005-2006 school year
Source: OSSE website: www.nclb.osse.dc.gov

A3(ii)(a) – Historical ESEA Results by Subgroup and School Level

ESEA RESULTS - Secondary Reading - Percent of Students Scoring Proficient or Advanced (2003-2009)								
	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**Percentage Point Proficiency Gain ('06 – '09)**
Race/Ethnicity								
Asian/Pacific Islanders	44.1%	43.9%	43.9%	56.3%	59.9%	63.2%	75.2%	**18.9**
Black/Non-Hispanic	28.2%	30.2%	29.8%	29.6%	32.2%	39.5%	42.6%	**13.0**
Hispanic	25.7%	28.6%	30.1%	38.6%	34.7%	44.5%	48.9%	**10.3**
White/Non-Hispanic	73.9%	81.0%	78.7%	82.5%	92.6%	94.6%	89.1%	**6.5**
Gender								
Female	33.7%	35.7%	35.9%	37.8%	40.0%	47.6%	50.8%	**13.0**
Male	26.2%	28.3%	27.8%	27.0%	29.2%	36.3%	39.6%	**12.6**
SPED								
Disabled	5.2%	8.7%	9.1%	8.4%	8.8%	14.4%	15.3%	**6.9**
English Proficiency								
LEP/NEP	15.6%	8.8%	12.5%	19.3%	17.6%	25.9%	34.6%	**15.3**
Econ. Status								
Econ. Disadvantaged	25.5%	27.4%	28.0%	27.2%	29.0%	35.4%	39.6%	**12.4**
STATE Total:	**29.8%**	**31.9%**	**31.9%**	**32.3%**	**34.8%**	**42.2%**	**45.4%**	**13.0**

* The DC-CAS test was first implemented in the 2005-2006 school year
Source: OSSE website: www.nclb.osse.dc.gov

A3(ii)(a) – Historical ESEA Results by Subgroup and School Level

ESEA RESULTS – Elementary Math - Percent of Students Scoring Proficient or Advanced (2003-2009)								
	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**Percentage Point Proficiency Gain ('06 – '09)**
Race/Ethnicity								
Asian/Pacific Islanders	83.9%	87.0%	89.3%	63.6%	67.7%	76.3%	82.1%	**18.5**
Black/Non-Hispanic	51.0%	52.8%	54.9%	22.8%	25.9%	35.9%	41.1%	**18.3**
Hispanic	56.8%	60.8%	67.1%	32.0%	39.4%	48.8%	53.5%	**21.4**
White/Non-Hispanic	91.7%	90.3%	88.2%	82.4%	77.7%	84.7%	88.5%	**6.1**
Gender								
Female	56.7%	58.3%	61.5%	28.0%	32.1%	42.5%	47.8%	**19.8**
Male	50.5%	52.8%	54.6%	25.6%	28.9%	38.9%	44.4%	**18.7**
SPED								
Disabled	13.1%	16.3%	23.2%	9.4%	11.9%	19.4%	21.5%	**12.1**
English Proficiency								
LEP/NEP	48.4%	51.1%	68.6%	29.0%	36.6%	45.3%	53.6%	**24.6**
Econ. Status								
Econ. Disadvantaged	49.5%	51.1%	55.1%	21.2%	25.8%	35.5%	40.3%	**19.1**
STATE Total:	**53.6%**	**55.5%**	**58.0%**	**26.8%**	**30.5%**	**40.7%**	**46.1%**	**19.3**

* The DC-CAS test was first implemented in the 2005-2006 school year
Source: OSSE website: www.nclb.osse.dc.gov

A3(ii)(a) – Historical ESEA Results by Subgroup and School Level

ESEA RESULTS – Secondary Math - Percent of Students Scoring Proficient or Advanced (2003-2009)								
	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**Percentage Point Proficiency Gain ('06 – '09)**
Race/Ethnicity								
Asian/Pacific Islanders	79.7%	79.5%	76.9%	69.5%	73.7%	81.0%	85.9%	**16.4**
Black/Non-Hispanic	34.0%	36.7%	32.4%	23.3%	30.0%	37.4%	43.3%	**19.9**
Hispanic	40.6%	44.9%	46.1%	31.6%	33.7%	49.8%	54.4%	**22.8**
White/Non-Hispanic	75.7%	82.6%	80.1%	77.4%	92.4%	94.2%	85.4%	**8.0**
Gender								
Female	40.1%	43.3%	38.5%	28.1%	34.8%	43.1%	48.7%	**20.6**
Male	33.5%	35.7%	33.1%	24.4%	30.9%	38.7%	44.0%	**19.5**
SPED								
Disabled	6.5%	9.4%	10.1%	5.6%	7.6%	12.8%	14.5%	**8.9**
English Proficiency								
LEP/NEP	39.3%	41.6%	41.6%	21.8%	23.6%	38.0%	45.2%	**23.5**
Econ. Status								
Econ. Disadvantaged	33.2%	36.2%	32.4%	22.0%	27.6%	35.0%	41.6%	**19.6**
STATE Total:	**36.6%**	**39.3%**	**35.8%**	**26.3%**	**32.9%**	**41.0%**	**46.4%**	**20.2**

* The DC-CAS test was first implemented in the 2005-2006 school year
Source: OSSE website: www.nclb.osse.dc.gov

A3(ii)(a) – Historical NAEP Scores by Subgroup

NAEP SCORES – 4th Grade Reading (2003 – 2007)					
	2003	**2005**	**2007**	**2009**	**6 Year Gains**
All students	188	191	197	202	**14**
Male	182	186	194	198	**16**
Female	195	195	200	206	**11**
White	254	252	258	256	**2**
Black	184	187	192	196	**12**
Hispanic	187	193	206	207	**20**
SPED	148	154	162	165	**17**
Not SPED	192	195	199	204	**12**
FRL	182	183	188	193	**11**
Not FRL	206	215	216	226	**20**
ELL	174	177	198	194	**20**
Not ELL	189	191	197	202	**13**

Source: National Assessment of Educational Progress: http://nces.ed/gov/nationsreportcard/naepdata/

A3(ii)(a) – Historical NAEP Scores by Subgroup

NAEP SCORES – 8th Grade Reading (2003 – 2007)					
	2003	**2005**	**2007**	**2009**	**6 Year Gains**
All students	239	238	241	242	**3**
Male	231	230	235	236	**5**
Female	245	245	245	248	**3**
White	**	301	**	**	
Black	236	235	238	239	**3**
Hispanic	240	247	249	249	**9**
SPED	199	199	210	205	**6**
Not SPED	243	243	243	245	**2**
FRL	232	234	234	237	**5**
Not FRL	248	249	253	256	**8**
ELL	231	**	**	**	
Not ELL	239	238	241	243	**4**

** Data not available due to inadequate sample size
Source: National Assessment of Educational Progress: http://nces.ed/gov/nationsreportcard/naepdata/

A3(ii)(a) – Historical NAEP Scores by Subgroup

NAEP Scores – 4th Grade Math (2003 – 2009)						
	2003	**2005**	**2007**	**2009**	**4 Year Gains**	**6 Year Gains**
All students	205	211	214	219	**8**	**14**
Male	204	212	213	218	**6**	**14**
Female	206	211	214	221	**10**	**15**
White	262	266	262	270	**4**	**8**
Black	202	207	209	213	**6**	**11**
Hispanic	205	215	220	227	**12**	**22**
SPED	177	188	188	193	**5**	**16**
Not SPED	208	214	216	222	**8**	**14**
FRL	200	206	207	211	**5**	**11**
Not FRL	221	229	228	242	**13**	**21**
ELL	200	206	209	215	**9**	**15**
Not ELL	205	211	214	220	**9**	**15**

Source: National Assessment of Educational Progress: http://nces.ed/gov/nationsreportcard/naepdata/

A3(ii)(a) – Historical NAEP Scores by Subgroup

NAEP Scores – 8th Grade Math (2003 – 2009)						
	2003	**2005**	**2007**	**2009**	**4 Year Gains**	**6 Year Gains**
All students	243	245	248	254	**9**	**11**
Male	242	246	248	252	**6**	**10**
Female	244	245	248	255	**10**	**11**
White	**	317	**	**		
Black	240	241	245	249	**8**	**9**
Hispanic	246	252	251	265	**13**	**19**
SPED	204	208	211	213	**5**	**9**
Not SPED	248	250	252	259	**9**	**11**
FRL	235	241	243	247	**6**	**12**
Not FRL	254	261	259	272	**11**	**18**
ELL	231	**	226	**		
Not ELL	244	246	249	254	**8**	**10**

** Data not available due to inadequate sample size
Source: National Assessment of Educational Progress: http://nces.ed.gov/nationsreportcard/naepdata/

A3(iii)(b) – Historical ESEA Achievement Gaps

ESEA Absolute Achievement Gap - Reading - Percent of Students Scoring Proficient or Advanced (2003-2009)								
	2003	2004	2005	2006	2007	2008	2009	Percentage Point Decrease in Gap ('06-'09)
Race/Ethnicity - Calculated as the amount a given ethnicity is below proficiency of (White/Non-Hispanic)								
Asian/Pacific Islanders	31.5%	29.4%	25.9%	22.8%	21.5%	20.4%	13.5%	**9.3**
Black/Non-Hispanic	47.6%	47.8%	45.4%	52.9%	54.1%	48.6%	45.8%	**7.1**
Hispanic	49.5%	49.0%	42.3%	44.9%	47.0%	41.0%	38.9%	**6.0**
Amer. Indian/Alaskan Native	39.8%	33.3%	**	31.1%	31.9%	**	12.6%	**18.5**
Gender - Calculated as (proficiency for females - proficiency for males)								
Female – Male	8.2%	7.5%	7.9%	9.7%	9.6%	10.9%	10.8%	**-1.1**
SPED - Calculated as (proficiency for non-disabled students - proficiency for special needs students)								
Non-disabled – SPED	33.5%	31.8%	30.3%	28.3%	26.9%	27.3%	33.0%	**-4.7**
English Proficiency - Calculated as (proficiency for non-LEP/NEP - proficiency for LEP/NEP)								
Non-LEP/NEP - LEP/NEP	14.9%	18.3%	3.2%	3.5%	3.1%	4.6%	0.7%	**2.8**
Econ. Status - Calculated as (proficiency for non-disadvantaged - proficiency for disadvantaged)								
Econ. Disadvantaged	8.2%	11.8%	7.9%	14.4%	13.8%	15.8%	17.9%	**-3.5**
STATE Total:	**35.5%**	**37.4%**	**39.8%**	**34.6%**	**36.2%**	**42.7%**	**45.3%**	

* The table above gives the absolute difference in percentage points for a given achievement gap
* Example: For gender gap in 2009, the female proficiency equals 50.7% and male equals 39.9% giving an absolute gap of 10.8%
** Data not available due to inadequate sample size
Source: OSSE website: www.nclb.osse.dc.gov

A3(iii)(b) – Historical ESEA Achievement Gaps

ESEA Absolute Achievement Gap - Math - Percent of Students Scoring Proficient or Advanced (2003-2009)								
	2003	2004	2005	2006	2007	2008	2009	Percentage Point Decrease in Gap ('06-'09)
Race/Ethnicity - Calculated as the amount a given ethnicity is below proficiency of (White/Non-Hispanic)								
Asian/Pacific Islanders	2.5%	3.4%	2.4%	14.1%	8.8%	8.0%	-0.5%	**14.7**
Black/Non-Hispanic	41.7%	42.6%	42.4%	57.0%	55.0%	50.6%	45.5%	**11.5**
Hispanic	36.2%	34.8%	27.8%	48.2%	45.3%	38.0%	32.5%	**15.7**
Amer. Indian/Alaskan Native	36.9%	30.5%	**	46.3%	32.2%	**	11.0%	**35.4**
Gender - Calculated as (proficiency for females - proficiency for males)								
Female – Male	6.7%	6.8%	5.9%	3.0%	3.5%	4.1%	4.4%	**-1.4**
SPED - Calculated as (proficiency for non-disabled students - proficiency for special needs students)								
Non-disabled – SPED	42.5%	42.0%	37.4%	23.2%	26.0%	28.8%	34.1%	**-10.8**
English Proficiency - Calculated as (proficiency for non-LEP/NEP - proficiency for LEP/NEP)								
Non-LEP/NEP - LEP/NEP	0.7%	-1.5%	-14.7%	-0.8%	-2.7%	-3.3%	-9.0%	**8.3**
Econ. Status - Calculated as (proficiency for non-disadvantaged - proficiency for disadvantaged)								
Econ. Disadvantaged	5.2%	8.2%	4.7%	13.8%	13.0%	14.4%	15.5%	**-1.7**
STATE Total:	**43.4%**	**45.5%**	**45.3%**	**26.1%**	**31.1%**	**39.6%**	**44.8%**	

* The table above gives the absolute difference in percentage points for a given achievement gap
* Example: For Gender Gap in 2009, the female proficiency equals 46.9% and male equals 42.6% giving an absolute gap of 4.4%
** Data not available due to inadequate sample size
Source: OSSE website: www.nclb.osse.dc.gov

A3(iii)(b) – Historical NAEP Achievement Gaps

NAEP Scores Absolute Achievement Gap – 4th Grade Reading					
	2003	**2005**	**2007**	**2009**	**Decrease in Gap ('03 - '09)**
All students	188	191	197	202	
Gender - Calculated as (female score - male score)					
Female – Male	13	9	6	8	**5**
Race/Ethnicity - Calculated as (white student score - specific subgroup score)					
Black	70	65	66	60	**10**
Hispanic	67	59	52	49	**18**
SPED - Calculated as (Not SPED score - SPED score)					
Not SPED – SPED	44	41	37	39	**5**
Free & Reduced Lunch - Calculated as (Not FRL score - FRL score)					
Not FRL – FRL	24	32	28	33	**-9**
English Language Learners - Calculated as (not-ELL score - ELL score)					
Not-ELL – ELL	15	14	-1	8	**7**

Source: National Assessment of Educational Progress: http://nces.ed/gov/nationsreportcard/naepdata/

A3(iii)(b) – Historical NAEP Achievement Gaps

NAEP Scores Absolute Achievement Gap – 8th Grade Reading					
	2003	**2005**	**2007**	**2009**	**Decrease in Gap ('03 - '09)**
All students	239	238	241	242	
Gender - Calculated as (female score - male score)					
Female – Male	14	15	10	12	**4**
Race/Ethnicity - Calculated as (white student score - specific subgroup score)					
Black	**	66	**	**	**N/A**
Hispanic	**	54	**	**	**N/A**
SPED - Calculated as (Not SPED score - SPED score)					
Not SPED – SPED	44	44	33	40	**4**
Free & Reduced Lunch - Calculated as (Not FRL score - FRL score)					
Not FRL – FRL	16	15	19	19	**-3**
English Language Learners - Calculated as (not-ELL score - ELL score)					
Not-ELL – ELL	8	**	**	**	**N/A**

** Data not available due to an inadequate sample size of the comparison subgroup
Source: National Assessment of Educational Progress: http://nces.ed/gov/nationsreportcard/naepdata/

A3(iii)(b) – Historical NAEP Achievement Gaps

NAEP Scores Absolute Achievement Gap – 4th Grade Math					
	2003	**2005**	**2007**	**2009**	**Decrease in Gap ('03 - '09)**
All students	205	211	214	219	
Gender - Calculated as (female score - male score)					
Female – Male	2	-1	1	3	**-1**
Race/Ethnicity - Calculated as (white student score - specific subgroup score)					
Black	60	59	53	57	**3**
Hispanic	57	51	42	43	**14**
SPED - Calculated as (Not SPED score - SPED score)					
Not SPED – SPED	31	26	28	29	**2**
Free & Reduced Lunch - Calculated as (Not FRL score - FRL score)					
Not FRL – FRL	21	23	21	31	**-10**
English Language Learners - Calculated as (not-ELL score - ELL score)					
Not-ELL – ELL	5	5	5	5	**0**

Source: National Assessment of Educational Progress: http://nces.ed/gov/nationsreportcard/naepdata/

A3(iii)(b) – Historical NAEP Achievement Gaps

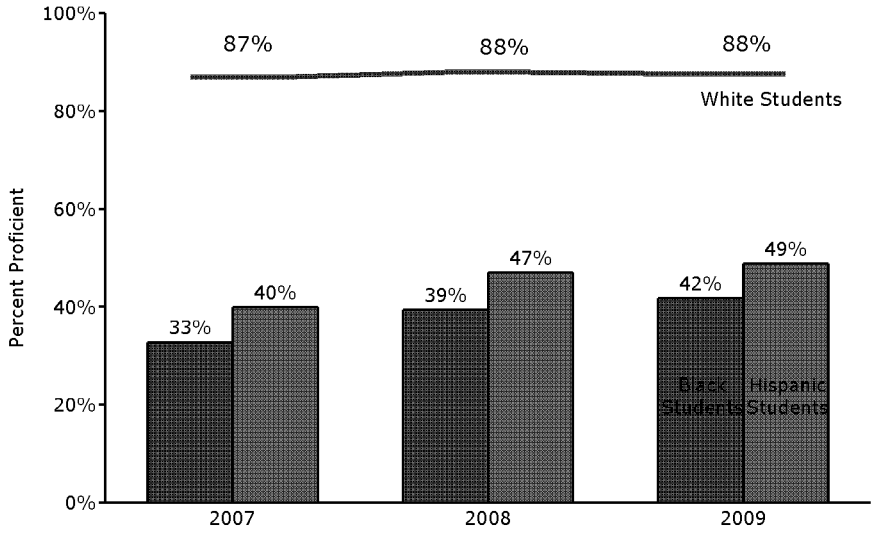
NAEP Scores Absolute Achievement Gap – 8th Grade Math					
	2003	**2005**	**2007**	**2009**	**Decrease in Gap ('03 - '09)**
All students	243	245	248	254	
Gender - Calculated as (female score - male score)					
Female – Male	2	-1	0	3	**-1**
Race/Ethnicity - Calculated as (white student score - specific subgroup score)					
Black	**	76	**	**	**N/A**
Hispanic	**	65	**	**	**N/A**
SPED - Calculated as (Not SPED score - SPED score)					
Not SPED – SPED	44	42	41	46	**-2**
Free & Reduced Lunch - Calculated as (Not FRL score - FRL score)					
Not FRL – FRL	19	20	16	25	**-6**
English Language Learners - Calculated as (not-ELL score - ELL score)					
Not-ELL – ELL	13	N/A	23	N/A	**-10 ('03 – '07)**

** Data not available due to an inadequate sample size of the comparison subgroup
Source: National Assessment of Educational Progress: http://nces.ed/gov/nationsreportcard/naepdata/

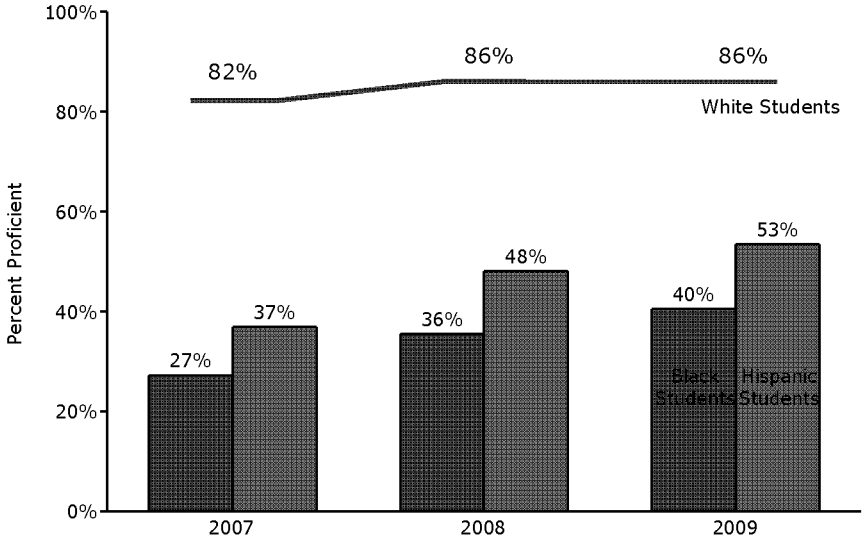
A3(ii)(b) – ESEA - Graph of Achievement Gap – Race/Ethnicity

Achievement Gap: Race/Ethnicity (2007-2009)

Reading



Math



A3(iii)(c) – Graduation Rates

Draft Graduation Rates by Subgroup (Class of 2009)*	
DCPS	72.33%
PCSB	83.35%
DC STATE	74.71%
Race/Ethnicity	
Asian	79.37%
Black	76.59%
Hispanic	61.71%
Native American	83.33%
White	72.78%
English Language Learners	
Limited English Proficiency	94.26%
Not LEP	74.19%
Special Education	
Special Education	94%
Regular Education	73%
Economic Status	
FRL	96.27%
No FRL	58.36%

High School Graduation Rates (2007-2009)			
	2007	**2008**	**2009**
STATEWIDE	N/A*	70.0%	74.7%
DCPS	66.2%	67.9%	72.3%
PCSB	N/A*	88.0%	83.4%
* STATEWIDE and PCSB graduation data for 2007 is not available			

* Graduation Rate for 2009 have not yet been fully audited

** Graduation data calculated using leaver rate method – (graduating seniors divided by the sum of graduating seniors and dropouts for the class over the preceding four years)

Source: OSSE: www.nclb.osse.dc.gov, District of Columbia Public Charter School Board

Appendix – Sections B-F & STEM

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Appendix B1.1

MOA Common Core Standards

The Council of Chief State School Officers and
The National Governors Association Center for Best Practices

Common Core Standards
Memorandum of Agreement

Purpose. This document commits states to a state-led process that will draw on evidence and lead to development and adoption of a common core of state standards (common core) in English language arts and mathematics for grades K-12. These standards will be aligned with college and work expectations, include rigorous content and skills, and be internationally benchmarked. The intent is that these standards will be aligned to state assessment and classroom practice. The second phase of this initiative will be the development of common assessments aligned to the core standards developed through this process.

Background. Our state education leaders are committed to ensuring all students graduate from high school ready for college, work, and success in the global economy and society. State standards provide a key foundation to drive this reform. Today, however, state standards differ significantly in terms of the incremental content and skills expected of students.

Over the last several years, many individual states have made great strides in developing high-quality standards and assessments. These efforts provide a strong foundation for further action. For example, a majority of states (35) have joined the American Diploma Project (ADP) and have worked individually to align their state standards with college and work expectations. Of the 15 states that have completed this work, studies show significant similarities in core standards across the states. States also have made progress through initiatives to upgrade standards and assessments, for example, the New England Common Assessment Program.

Benefits to States. The time is right for a state-led, nation-wide effort to establish a common core of standards that raises the bar for all students. This initiative presents a significant opportunity to accelerate and drive education reform toward the goal of ensuring that all children graduate from high school ready for college, work, and competing in the global economy and society. With the adoption of this common core, participating states will be able to:

- Articulate to parents, teachers, and the general public expectations for students;
- Align textbooks, digital media, and curricula to the internationally benchmarked standards;
- Ensure professional development to educators is based on identified need and best practices;
- Develop and implement an assessment system to measure student performance against the common core; and
- Evaluate policy changes needed to help students and educators meet the common core standards and "end-of-high-school" expectations.

An important tenet of this work will be to increase the rigor and relevance of state standards across all participating states; therefore, no state will see a decrease in the level of student expectations that exist in their current state standards.

Process and Structure

- **Common Core State-Based Leadership.** The Council of Chief State School Officers (CCSSO) and the National Governors Association Center for Best Practices (NGA Center) shall assume responsibility for coordinating the process that will lead to state adoption of a common core set of standards. These organizations represent governors and state commissioners of education who are charged with defining K-12 expectations at the state level. As such, these organizations will

facilitate a state-led process to develop a set of common core standards in English language arts and math that are:

- Fewer, clearer, and higher, to best drive effective policy and practice;
- Aligned with college and work expectations, so that all students are prepared for success upon graduating from high school;
- Inclusive of rigorous content and application of knowledge through high-order skills, so that all students are prepared for the 21st century;
- Internationally benchmarked, so that all students are prepared for succeeding in our global economy and society; and
- Research and evidence-based.

- **National Validation Committee.** CCSSO and the NGA Center will create an expert validation group that will serve a several purposes, including validating end-of-course expectations, providing leadership for the development of K-12 standards, and certifying state adoption of the common core. The group will be comprised of national and international experts on standards. Participating states will have the opportunity to nominate individuals to the group. The national validation committee shall provide an independent review of the common core. The national validation committee will review the common core as it is developed and offer comments, suggestions, and validation of the process and products developed by the standards development group. The group will use evidence as the driving factor in validating the common core.

- **Develop End-of-High-School Expectations.** CCSSO and the NGA Center will convene Achieve, ACT and the College Board in an open, inclusive, and efficient process to develop a set of end-of–high-school expectations in English language arts and mathematics based on evidence. We will ask all participating states to review and provide input on these expectations. This work will be completed by July 2009.

- **Develop K-12 Standards in English Language Arts and Math.** CCSSO and the NGA Center will convene Achieve, ACT, and the College Board in an open, inclusive, and efficient process to develop K-12 standards that are grounded in empirical research and draw on best practices in standards development. We will ask participating states to provide input into the drafting of the common core and work as partners in the common core standards development process. This work will be completed by December 2009.

- **Adoption.** The goal of this effort is to develop a true common core of state standards that are internationally benchmarked. Each state adopting the common core either directly or by fully aligning its state standards may do so in accordance with current state timelines for standards adoption not to exceed three (3) years.

  This effort is voluntary for states, and it is fully intended that states adopting the common core may choose to include additional state standards beyond the common core. States that choose to align their standards to the common core standards agree to ensure that the common core represents at least 85 percent of the state's standards in English language arts and mathematics.

  Further, the goal is to establish an ongoing development process that can support continuous improvement of this first version of the common core based on research and evidence-based learning and can support the development of assessments that are aligned to the common core across the states, for accountability and other appropriate purposes.

- **National Policy Forum.** CCSSO and the NGA Center will convene a National Policy Forum (Forum) comprised of signatory national organizations (e.g., the Alliance for Excellent Education, Business Roundtable, National School Boards Association, Council of Great City Schools, Hunt Institute, National Association of State Boards of Education, National Education Association, and others) to share ideas, gather input, and inform the common core initiative. The forum is intended as a place for refining our shared understanding of the scope and elements of a common core; sharing and coordinating the various forms of implementation of a common core; providing a means to develop common messaging between and among participating organizations; and building public will and support.

- **Federal Role.** The parties support a state-led effort and not a federal effort to develop a common core of state standards; there is, however, an appropriate federal role in supporting this state-led effort. In particular, the federal government can provide key financial support for this effort in developing a common core of state standards and in moving toward common assessments, such as through the Race to the Top Fund authorized in the American Recovery and Reinvestment Act of 2009. Further, the federal government can incentivize this effort through a range of tiered incentives, such as providing states with greater flexibility in the use of existing federal funds, supporting a revised state accountability structure, and offering financial support for states to effectively implement the standards. Additionally, the federal government can provide additional long-term financial support for the development of common assessments, teacher and principal professional development, other related common core standards supports, and a research agenda that can help continually improve the common core over time. Finally, the federal government can revise and align existing federal education laws with the lessons learned from states' international benchmarking efforts and from federal research.

Agreement. The undersigned state leaders agree to the process and structure as described above and attest accordingly by our signature(s) below.

Signatures	
Governor:	
Chief State School Officer:	

Appendix B1.2

Common Core Standards
List of States

Common Core Standards List of States

Press Release 9/1/09

Fifty-One States And Territories Join Common Core State Standards Initiative

NGA Center, CCSSO Convene State-led Process to Develop Common English-language arts and Mathematics Standards

The National Governors Association Center for Best Practices (NGA Center) and the Council of Chief State School Officers (CCSSO) today released the names of the states and territories that have joined the Common Core State Standards Initiative:

Alabama; Arizona; Arkansas; California; Colorado; Connecticut; Delaware; District of Columbia; Florida; Georgia; Hawaii; Idaho; Illinois; Indiana; Iowa; Kansas; Kentucky; Louisiana; Maine; Maryland; Massachusetts; Michigan; Minnesota; Mississippi; Missouri; Montana; Nebraska; Nevada; New Hampshire; New Jersey; New Mexico; New York; North Carolina; North Dakota; Ohio; Oklahoma; Oregon; Pennsylvania; Puerto Rico; Rhode Island; South Carolina; South Dakota; Tennessee; Utah; Vermont; Virgin Islands; Virginia; Washington; West Virginia; Wisconsin; Wyoming.

Appendix B1.3

Common Core College- and Career-Readiness Standards

Mathematical Practice

Proficient students expect mathematics to make sense. They take an active stance in solving mathematical problems. When faced with a non-routine problem, they have the courage to plunge in and try something, and they have the procedural and conceptual tools to carry through. They are experimenters and inventors, and can adapt known strategies to new problems. They think strategically.

Students who engage in these practices discover ideas and gain insights that spur them to pursue mathematics beyond the classroom walls. They learn that effort counts in mathematical achievement.[a] These are practices that expert mathematical thinkers encourage in apprentices. Encouraging these practices in our students should be as much a goal of the mathematics curriculum as is teaching specific content topics and procedures.[b] Taken together with the Standards for Mathematical Content, they support productive entry into college courses or career pathways.

Core Practices · Students can and do:

1 Attend to precision.

Mathematically proficient students organize their own ideas in a way that can be communicated precisely to others, and they analyze and evaluate others' mathematical thinking and strategies noting the assumptions made. They clarify definitions. They state the meaning of the symbols they choose, are careful about specifying units of measure and labeling axes, and express their answers with an appropriate degree of precision. Rather than saying, "let v be speed and let t be time," they would say "let v be the speed in meters per second and let t be the elapsed time in seconds from a given starting time." They recognize that when someone says the population of the United States in June 2008 was 304,059,724, the last few digits indicate unwarranted precision.

2 Construct viable arguments.

Mathematically proficient students understand and use stated assumptions, definitions and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They break things down into cases and can recognize and use counterexamples. They use logic to justify their conclusions, communicate them to others and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose.

3 Make sense of complex problems and persevere in solving them.

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They consider analogous problems, try special cases and work on simpler forms. They evaluate their progress and change course if necessary. They try putting algebraic expressions into different forms or try changing the viewing window on their calculator to get the information they need. They look for correspondences between equations, verbal descriptions, tables, and graphs. They draw diagrams of relationships, graph data, search for regularity and trends, and construct mathematical models. They check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?"

4 Look for and make use of structure.

Mathematically proficient students look closely to discern a pattern. For example, in $x^2 + 5x + 6$ they can see the 5 as $2 + 3$ and the 6 as 2×3. They recognize the significance of an existing line in a geometric figure and can add an auxiliary line to make the solution of a problem clear. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects. For example, by seeing $5 - 3(x - y)^2$ as 5 minus a positive number times a square, they see that it cannot be more than 5 for any real numbers x and y.[b]

5 Look for and express regularity in repeated reasoning.

Mathematically proficient students pay attention to repeated calculations as they carry them out, and look both for general algorithms and for shortcuts. For example, by paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, they might abstract the equation $(y - 2)/(x - 1) = 3$. Noticing the regularity in the way terms cancel in the expansions of $(x - 1)(x + 1)$, $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x^2 + x + 1)$ leads to the general formula for the sum of a geometric series. As they work through the solution to a problem, proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.[b]

6 Make strategic decisions about the use of technological tools.

Mathematically proficient students consider the available tools when solving a mathematical problem, whether pencil and paper, ruler, protractor, graphing calculator, spreadsheet, computer algebra system, statistical package, or dynamic geometry software. They are familiar enough with all of these tools to make sound decisions about when each might be helpful. They use mathematical understanding and estimation strategically, attending to levels of precision, to ensure appropriate levels of approximation and to detect possible errors. They are able to use these tools to explore and deepen their understanding of concepts.

(a) For the importance of students' beliefs about effort, see the National Mathematics Advisory Panel's Report of the Task Group on Learning Processes, p. 4-10 (2008). (b) Cuoco, A., Goldenberg, E. P., and Mark, J., *Journal of Mathematical Behavior*, 15 (4), 375-402, 1996; *Focus in High School Mathematics*. Reston, VA: NCTM, in press; Harel, G., What is Mathematics? A Pedagogical Answer to a Philosophical Question. In R. B. Gold & R. Simons (Eds.), *Current Issues in the Philosophy of Mathematics From the Perspective of Mathematicians*, Mathematical Association of America, 2008.

Number

Core Concepts · Students understand that:

A The real numbers include the rational numbers and are in one-to-one correspondence with the points on the number line.

B Quantities can be compared using division, yielding rates and ratios.

C A fraction can represent the result of dividing the numerator by the denominator; equivalent fractions have the same value.

D Place value and the rules of arithmetic form the foundation for efficient algorithms.

A Coherent Understanding of Number. Procedural fluency in operations with real numbers and strategic competence in approximation are grounded in an understanding of place value. The rules of arithmetic govern operations on numbers and extend to operations in algebra:

- Numbers can be added in any order with any grouping and multiplied in any order with any grouping.
- Adding 0 and multiplying by 1 both leave a number unchanged.
- All numbers have additive inverses, and all numbers except zero have multiplicative inverses.
- Multiplication distributes over addition.

Subtraction and division are defined in terms of addition and multiplication, so are also governed by these rules.

The place value system bundles units into 10s, then 10s into 100s, and so on, providing an efficient way to name large numbers. Subdividing in a similar way extends this to the decimal system, which provides an address system for locating all real numbers on the number line with arbitrarily high accuracy. Place value is the basis for efficient algorithms, reducing much computation to single-digit arithmetic. Mental computation strategies also make opportunistic use of the rules of arithmetic, as when the product $5\times177\times2$ is computed at a glance to obtain 1770, rather than methodically working from left to right.

An estimate may be more appropriate than an exact value, for example, when you want to know the number of calories in a meal. Often a result is reported using fewer digits than were calculated. A mature number sense includes having rules of thumb about how much accuracy is appropriate and understanding that accuracy to more than a few decimal places often takes substantial effort. Estimation and approximation are also useful in checking calculations.

Rational numbers represented as fractions can be located on the number line by seeing them as numbers expressed in different units; for example, 3/5 is 3 units, where each unit is 1/5. However, rational numbers do not fill out the number line. There are also irrational numbers, such as π or $\sqrt{2}$. Each point on the number line then corresponds to a real number that is either rational or irrational.

Connections to Expressions, Functions and Coordinates. The rules of arithmetic govern the manipulations of expressions and functions. Two perpendicular number lines define the coordinate plane.

Core Skills · Students can and do:

1 Compare numbers and make sense of their magnitude.

Include positive and negative numbers expressed as fractions, decimals, powers, and roots. Limit to square and cube roots. Include very large and very small numbers and the use of scientific notation.

2 Know when and how to use standard algorithms, and perform them flexibly, accurately and efficiently.*

3 Use mental strategies and technology to formulate, represent and solve problems.**

4 Solve multi-step problems involving fractions and percentages.

Include situations such as simple interest, tax, markups/markdowns, gratuities and commissions, fees, percent increase or decrease, percent error, expressing rent as a percentage of take-home pay, and so on.

5 Use estimation and approximation to solve problems.

Include evaluating answers for their reasonableness, detecting errors, and giving answers to an appropriate level of precision.

* This aligns with the concept of procedural fluency as in the National Research Council report *Adding it up: Helping children learn mathematics*. Specifically, "*Procedural fluency* refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them flexibly, accurately, and efficiently" (p. 121).

** This aligns with the concept of strategic competence as described in *Adding it up*. "*Strategic competence* refers to the ability to formulate mathematical problems, represent them, and solve them" (p. 124).

Quantity

Core Concepts · Students understand that:

A The value of a quantity is not specified unless the units are named or understood from the context.

B Quantities can be added and subtracted only when they are of the same type (length, area, speed, etc.).

C Quantities can be multiplied or divided to create new types of quantities, called derived quantities.

A Coherent Understanding of Quantity. A quantity is an attribute of an object or phenomenon that can be specified using a number and a unit, such as 2.7 centimeters, 42 questions or 28 miles per gallon.

The length of a football field and the speed of light are both quantities. If we choose units of miles per second, then the speed of light has a value of approximately 186,000 miles per second. But the speed of light need not be expressed in miles per second; it may be approximated by 3×10^8 meters per second or in any other unit of speed. Bare numerical values such as 186,000 do not describe quantities unless they are paired with units.

Speed (distance divided by time), rectangular area (length multiplied by length), density (mass divided by volume), and population density (number of people divided by land area) are examples of derived quantities, obtained by multiplying or dividing quantities.

It can make sense to add two quantities, such as when a child 51 inches tall grows 3 inches to become 54 inches tall. To be added or subtracted, quantities must be of the same type (length, area, speed, etc.); to add or subtract their values, the quantities must be expressed in the same units. Converting quantities to have the same units is like converting fractions to have a common denominator before adding or subtracting. But, even when quantities have the same units it does not always make sense to add them. For example, if a wooded park with 300 trees per acre is next to a field with 30 trees per acre, they do not have 330 trees per acre.

Doing algebra with units in a calculation reveals the units of the answer, and can help reveal a mistake if, for example, the answer comes out to be a distance when it should be a speed.

Connections to Number, Expressions, Equations, Functions, Modeling and Statistics. Operations described under Number and Expressions govern the operations one performs on quantities, including the units involved. Quantity is an integral part of any application of mathematics, and has connections to solving problems using data, equations, functions and modeling.

Core Skills · Students can and do:

1 Know when and how to convert units in computations.

Include the addition and subtraction of quantities of the same type expressed in different units; averaging data given in mixed units; converting units for derived quantities such as density and speed.

2 Use and interpret quantities and units correctly in algebraic formulas.

Include specifying units when defining variables and attending to units when writing expressions and equations.

3 Use and interpret quantities and units correctly in graphs and data displays.

Include function graphs, data tables, scatterplots and other visual displays of dimensioned data.

4 Use units as a way to understand problems and to guide the solution of multi-step problems.

Include examples such as acceleration; currency conversions; people-hours; social science measures, such as deaths per 100,000; and general rates, such as points per game.

Expressions

Core Concepts · Students understand that:

A Expressions are constructions built up from numbers, variables, and operations, which have a numerical value when each variable is replaced with a number.

B Complex expressions are made up of simpler expressions.

C The rules of arithmetic can be applied to transform an expression without changing its value.

D Rewriting expressions in equivalent forms serves a purpose in solving problems.

A Coherent Understanding of Expressions. Expressions use numbers, variables and operations to describe computations. The rules of arithmetic, the use of parentheses and the conventions about order of operations assure that the computation has a well-determined value.

Reading an expression with comprehension involves analysis of its underlying structure, which may suggest a different but equivalent way of writing it that exhibits some different aspect of its meaning. For example, $p + 0.05p$ can be interpreted as the addition of a 5% tax to a price p. But rewriting $p + 0.05p$ as $1.05p$ shows that adding a tax is the same as multiplying by a constant factor.

Algebraic manipulations are based on the conventions of algebraic notation and the rules of arithmetic. Heuristic mnemonic devices are not a substitute for procedural fluency. For example, factoring, expanding, collecting like terms, the rules for interpreting minus signs next to parenthetical sums, and adding fractions with a common denominator are all instances of the distributive law; the definitions for negative and rational exponents are based on the extension of the exponent laws for positive integers. The laws of exponents connect multiplication of numbers to addition of exponents and thus express the deep relationship between addition and multiplication captured by the parallel nature of the rules of arithmetic for these operations.

Complex expressions are made up of simpler expressions using arithmetic operations and substitution. When simple expressions within more complex expressions are treated as single quantities, or chunks, the underlying structure of the larger expression may be more evident.

Connections to Equations and Functions. Setting expressions equal to each other leads to equations. Expressions can define functions of the variables that appear in them, with equivalent expressions defining the same function.

Core Skills · Students can and do:

1 See structure in expressions.

For example, recognize: that the expressions $x^4 - y^4$ and $(x+y)^2 - (x-y)^2$ are differences of squares; that there are different ways to rewrite the latter expression, e.g., by expanding and collecting like terms or by factoring as a difference of squares; that p is a common factor in $p + 0.025p$; that an expression in the form $(x-3)^2 + 14$ reveals its minimum value.

2 Manipulate simple expressions.

Show procedural fluency in the following cases: factoring out common terms; factoring expressions with quadratic structure; writing in standard form sums, differences, and products of polynomials. Include completing the square and rewriting in standard form sums, differences, products, and quotients of simple rational expressions; rewriting expressions with negative exponents and those involving square or cube roots of a single term involving exponents.

3 Define variables and write an expression to represent a quantity in a problem.

Include contextual problems.

4 Interpret an expression that represents a quantity in terms of the context.

Include interpreting parts of an expression, such as terms, factors and coefficients.

Equations

Core Concepts · Students understand that:

A An equation is a statement that two expressions are equal.

B The solutions of an equation are the values of the variables that make the resulting numerical statement true.

C The steps in solving an equation are guided by understanding and justified by logical reasoning.

D Equations not solvable in one number system may have solutions in a larger number system.

A Coherent Understanding of Equations. An equation is a statement that two expressions are equal. Solutions to an equation are the values of the variables in it that make it true. If the equation is true for all values of the variables, then we call it an identity; identities are often discovered by manipulating one expression into another.

The solutions of an equation in one variable form a set of numbers; the solutions of an equation in two variables form a set of ordered pairs, which can be graphed in the plane. Equations can be combined into systems to be solved simultaneously.

An equation can be solved by successively transforming it into one or more simpler equations. The process is governed by deductions based on the properties of equality. For example, one can add the same constant to both sides without changing the solutions, but squaring both sides might lead to extraneous solutions. Strategic competence in solving includes looking ahead for productive manipulations and anticipating the nature and number of solutions.

Some equations have no solutions in a given number system, stimulating the formation of expanded number systems (integers, rational numbers, real numbers and complex numbers).

A formula is a type of equation. The same solution techniques used to solve equations can be used to rearrange formulas. For example, the formula for the area of a trapezoid, $A = \left(\frac{b_1+b_2}{2}\right)h$, can be solved for h using the same deductive process.

Inequalities can be solved in much the same way as equations. Many, but not all, of the properties of equality extend to the solution of inequalities.

Connections to Functions, Coordinates, and Modeling. Equations in two variables may define functions. Asking when two functions have the same value leads to an equation; graphing the two functions allows for the approximate solution of the equation. Equations of lines involve coordinates, and converting verbal descriptions to equations is an essential skill in modeling.

Core Skills · Students can and do:

1 Understand a problem and formulate an equation to solve it.

Extend to inequalities and systems.

2 Solve equations in one variable using manipulations guided by the rules of arithmetic and the properties of equality.

Solve linear equations with procedural fluency. For quadratic equations, include solution by inspection, by factoring, or by using the quadratic formula. Understand that the quadratic formula comes from completing the square. Include simple absolute value equations solvable by direct inspection and by understanding the interpretation of absolute value as distance.

3 Rearrange formulas to isolate a quantity of interest.

Exclude cases that require extraction of roots or inverse functions.

4 Solve systems of equations.

Focus on pairs of simultaneous linear equations in two variables. Include algebraic techniques, graphical techniques and solving by inspection.

5 Solve linear inequalities in one variable and graph the solution set on a number line.

Emphasize solving the associated equality and determining on which side of the solution of the associated equation the solutions to the inequality lie.

6 Graph the solution set of a linear inequality in two variables on the coordinate plane.

Emphasize graphing the associated equation, using a dashed or solid line as appropriate and shading to indicate the half-plane on which the solutions to the inequality lie.

Functions

Core Concepts · Students understand that:

A A function is a rule, often defined by an expression, that assigns a unique output for every input.

B The graph of a function f is a set of ordered pairs $(x, f(x))$ in the coordinate plane.

C Functions model situations where one quantity determines another.

D Common functions occur in families where each member describes a similar type of dependence.

A Coherent Understanding of Functions. Functions model situations where one quantity determines another. For example, the return on $10,000 invested at an annualized percentage rate of 4.25% is a function of the length of time the money is invested. Because nature and society are full of dependencies between quantities, functions are important tools in the construction of mathematical models.

In school mathematics, functions usually have numerical inputs and outputs and are often defined by an algebraic expression. For example, the time in hours it takes for a plane to fly 1000 miles is a function of the plane's average ground speed in miles per hour, v; the rule $T(v) = 1000/v$ expresses this relationship algebraically and defines a function whose name is T.

The set of possible inputs to a function is called its domain. We often infer the domain to be all inputs for which the expression defining a function has a value, or for which the function makes sense in a given context. The graph of a function is a useful way of visualizing the relationship the function models, and manipulating the expression for a function can throw light on the function's properties.

Two important families of functions characterized by laws of growth are linear functions, which grow at a constant rate, and exponential functions, which grow at a constant percent rate. Linear functions with an initial value of zero describe proportional relationships.

Connections to Expressions, Equations, Modeling and Coordinates. Determining an output value for a particular input involves evaluating an expression; finding inputs that yield a given output involves solving an equation. The graph of a function f is the same as the solution set of the equation $y = f(x)$. Questions about when two functions have the same value lead to equations, whose solutions can be visualized from the intersection of the graphs. Since functions describe relationships between quantities, they are frequently used in modeling. Sometimes functions are defined by a recursive process, which can be modeled effectively using a spreadsheet or other technology.

Core Skills · Students can and do:

1 Recognize proportional relationships and solve problems involving rates and ratios.

Include being able to express proportional relationships as functions.

2 Describe the qualitative behavior of common types of functions using graphs and tables.

Identify: intercepts; intervals where the function is increasing, decreasing, positive or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. Use technology to explore the effects of parameter changes on the graphs of linear, power, quadratic, polynomial, simple rational, exponential, logarithmic, sine and cosine, absolute value and step functions.

3 Analyze functions using symbolic manipulation.

Include slope-intercept and point-slope form of linear functions; vertex form of quadratic functions to identify symmetry and find maximums and minimums; factored form to find zeros. Use manipulations as described under Expressions.

4 Use the families of linear and exponential functions to solve problems.

For linear functions $f(x) = mx + b$, understand b as the intercept or initial value and m as the slope or rate of change. For exponential functions $f(x) = a \cdot b^x$, understand a as the intercept or initial value and b as the growth factor.

5 Find and interpret rates of change.

Compute the rate of change of linear functions and make qualitative observations about how the rate of change varies for nonlinear functions.

Modeling

Core Concepts · Students understand that:

A Mathematical models involve choices and assumptions that abstract key features from situations to help us solve problems.

B Even very simple models can be useful.

A Coherent Understanding of Modeling. Modeling uses mathematics to help us make sense of the real world—to understand quantitative relationships, make predictions, and propose solutions.

A model can be very simple, such as a geometric shape to describe a physical object like a coin. Even so simple a model involves making choices. It is up to us whether to model the solid nature of the coin with a three-dimensional cylinder, or whether a two-dimensional disk works well enough for our purposes. For some purposes, we might even choose to adjust the right circular cylinder to model more closely the way the coin deviates from the cylinder.

In any given situation, the model we devise depends on a number of factors: How precise an answer do we want or need? What aspects of the situation do we most need to understand, control, or optimize? What resources of time and tools do we have? The range of models we can create and analyze is constrained as well by the limitations of our mathematical and technical skills. For example, modeling a physical object, a delivery route, a production schedule, or a comparison of loan amortizations each requires different sets of tools. Networks, spreadsheets and algebra are powerful tools for understanding and solving problems drawn from different types of real-world situations. One of the insights provided by mathematical modeling is that essentially the same mathematical structure might model seemingly different situations.

The basic modeling cycle is one of (1) identifying the key features of a situation, (2) creating geometric, algebraic or statistical objects that describe key features of the situation, (3) analyzing and performing operations on these objects to draw conclusions and (4) interpreting the results of the mathematics in terms of the original situation. Choices and assumptions are present throughout this cycle.

Connections to Quantity, Equations, Functions, Shape, Coordinates and Statistics. Modeling makes use of shape, data, graphs, equations and functions to represent real-world quantities and situations.

Core Skills · Students can and do:

1 Model numerical situations.

Include readily applying the four basic operations in combination to solve multi-step quantitative problems with dimensioned quantities; making estimates to introduce numbers into a situation and get problems started; recognizing proportional or near-proportional relationships and analyzing them using characteristic rates and ratios.

2 Model physical objects with geometric shapes.

Include common objects that can reasonably be idealized as two- and three-dimensional geometric shapes. Identify the ways in which the actual shape varies from the idealized geometric model.

3 Model situations with equations and inequalities.

Include situations well described by a linear inequality in two variables or a system of linear inequalities defining a region in the plane.

4 Model situations with common functions.

Include situations well described by linear, quadratic or exponential functions; and situations that can be well described by inverse variation ($f(x) = k/x$). Include identifying a family of functions that models features of a problem, and identifying a particular function of that family and adjusting it to fit by changing parameters. Understand the recursive nature of situations modeled by linear and exponential functions.

5 Model situations using probability and statistics.

Include using simulations to model probabilistic situations; describing the shape of a distribution of values and summarizing a distribution with measures of center and variability; modeling a bivariate relationship using a trend line or a regression line.

6 Interpret the results of applying a model and compare models for a particular situation.

Include realizing that models seldom fit exactly and so there can be error; identifying simple sources of error and being careful not to over-interpret models. Include recognizing that there can be many models that relate to a situation, that they can capture different aspects of the situation, that they can be simpler or more complex, and that they can have a better or worse fit to the situation and the questions being asked.

Shape

Core Concepts · Students understand that:

A Shapes and their parts, attributes, and measurements can be analyzed deductively.*

B Congruence, similarity, and symmetry can be analyzed using transformations.

C Mathematical shapes model the physical world, resulting in practical applications of geometry.

D Right triangles and the Pythagorean theorem are central to geometry and its applications, including trigonometry.

A Coherent Understanding of Shape. From only a few axioms, the deductive method of Euclid generates a rich body of theorems about geometric objects, their attributes and relationships. Once understood, those attributes and relationships can be applied in diverse practical situations—interpreting a schematic drawing, estimating the amount of wood needed to frame a sloping roof, rendering computer graphics, or designing a sewing pattern for the most efficient use of material.

Understanding the attributes of geometric objects often relies on measurement: a circle is a set of points in a plane at a fixed distance from a point; a cube is bounded by six squares of equal area; when two parallel lines are crossed by a transversal, pairs of corresponding angles are congruent.

The concepts of congruence, similarity and symmetry can be united under the concept of geometric transformation. Reflections and rotations each explain a particular type of symmetry, and the symmetries of an object offer insight into its attributes—as when the reflective symmetry of an isosceles triangle assures that its base angles are congruent. Applying a scale transformation to a geometric figure yields a similar figure. The transformation preserves angle measure, and lengths are related by a constant of proportionality. If the constant of proportionality is one, distances are also preserved (so the transformation is a rigid transformation) and the figures are congruent.

The definitions of sine, cosine and tangent for acute angles are founded on right triangle similarity, and, with the Pythagorean theorem, are fundamental in many practical and theoretical situations.

Connections to Coordinates, Functions and Modeling. The Pythagorean theorem is a key link between geometry, measurement and distance in the coordinate plane. Parameter changes in families of functions can be interpreted as transformations applied to their graphs and those functions, as well as geometric objects in their own right, can be used to model contextual situations.

*In this document, deductive analysis aligns with the notion of adaptive reasoning as defined in *Adding it Up*, and includes empirical exploration, informal justification, and formal proof.

Core Skills · Students can and do:

1 Use multiple geometric properties to solve problems involving geometric figures.

Properties include: measures of interior angles of a triangle sum to 180°; vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; measures of supplementary angles sum to 180°; two lines parallel to a third are parallel to each other; points on a perpendicular bisector of a segment are exactly those equidistant from the segment's endpoints; and a line tangent to a circle is perpendicular to the radius meeting it.

2 Prove theorems, test conjectures and identify logical errors.

Include theorems establishing the properties in Core Skill 1 and other theorems about angles, parallel and perpendicular lines, similarity and congruence of triangles.

3 Construct and interpret representations of geometric objects.

Include classical construction techniques and construction techniques supported by modern technologies. Include moving between two-dimensional representations and the three-dimensional objects they represent, such as in schematics, assembly instructions, perspective drawings and multiple views.

4 Solve problems involving measurements.

Include measurement (length, angle measure, area, surface area, and volume) of a variety of figures and shapes in two- and three-dimensions. Compute measurements using formulas and by decomposing complex shapes into simpler ones.

5 Solve problems involving similar triangles and scale drawings.

Include computing actual lengths, areas and volumes from a scale drawing and reproducing a scale drawing at a different scale.

6 Apply properties of right triangles and right triangle trigonometry to solve problems.

Include using the Pythagorean theorem and properties of special right triangles, and applying sine, cosine and tangent to determine lengths and angle measures of right triangles. Use right triangles and their properties to solve real-world problems. Limit angle measures to degrees.

Coordinates

Core Concepts · Students understand that:

A Locations in the plane or in space can be specified by pairs or triples of numbers called coordinates.

B Coordinates link algebra with geometry and allow methods in one domain to solve problems in the other.

C The set of solutions to an equation in two variables forms a curve in the coordinate plane—such as a line, parabola, circle—and the solutions to systems of equations correspond to intersections of these curves.

A Coherent Understanding of Coordinates. Applying a coordinate system to Euclidean space connects algebra and geometry, resulting in powerful methods of analysis and problem solving.

Just as the number line associates numbers with locations in one dimension, a pair of perpendicular axes associates pairs of numbers with locations in two dimensions. This correspondence between numerical coordinates and geometric points allows methods from algebra to be applied to geometry and vice versa. The solution set of an equation becomes a geometric curve, making visualization a tool for doing and understanding algebra. Geometric shapes can be described by equations, making algebraic manipulation into a tool for geometric understanding, modeling and proof.

Coordinate geometry is a rich field for exploration. How does a geometric transformation such as a translation or reflection affect the coordinates of points? How is the geometric definition of a circle reflected in its equation?

Adding a third perpendicular axis associates three numbers with locations in three dimensions and extends the use of algebraic techniques to problems involving the three-dimensional world we live in.

Connections to Shape, Quantity, Equations and Functions. Coordinates can be used to reason about shapes. In applications, coordinate values often have units (such as meters and bushels). A one-variable equation of the form $f(x) = g(x)$ may be solved in the coordinate plane by finding intersections of the curves $y = f(x)$ and $y = g(x)$.

Core Skills · Students can and do:

1 Translate fluently between lines in the coordinate plane and their equations.

Include predicting visual features of lines by inspection of their equations, determining the equation of the line through two given points, and determining the equation of the line with a given slope passing through a given point.

2 Identify the correspondence between parameters in common families of equations and the location and appearance of their graphs.

Include common families of equations—the graphs of $Ax + By = C$, $y = mx + b$ and $x = a$ are straight lines; the graphs of $y = a(x - h)^2 + k$ and $y = Ax^2 + Bx + C$ are parabolas; and the graph of $(x - h)^2 + (y - k)^2 = r^2$ is a circle.

3 Use coordinates to solve geometric problems.

Include proving simple theorems algebraically, using coordinates to compute perimeters and areas for triangles and rectangles, finding midpoints of line segments, finding distances between pairs of points and determining when two lines are parallel or perpendicular.

Probability

Core Concepts · Students understand that:

A Probability models outcomes for situations in which there is inherent randomness, quantifying the degree of uncertainty in terms of relative frequency of occurrence.

B The law of large numbers provides the basis for estimating certain probabilities by use of empirical relative frequencies.

C The laws of probability govern the calculation of probabilities of combined events.

D Interpreting probabilities contextually is essential to rational decision-making in situations involving randomness.

A Coherent Understanding of Probability. Probability assesses the likelihood of an event in a situation that involves randomness. It quantifies the degree of certainty that an event will happen as a number from 0 through 1. This number is generally interpreted as the relative frequency of occurrence of the event over the long run.

The structure of a probability model begins by listing or describing the possible outcomes for a random situation (the sample space) and assigning probabilities based on an assumption about long-run relative frequency. In situations such as flipping a coin, rolling a number cube, or drawing a card, it is reasonable to assume various outcomes are equally likely.

Compound events constructed from these simple ones can be represented by tree diagrams and by frequency or relative frequency tables. The probabilities of compound events can be computed using these representations and by applying the additive and multiplicative laws of probability. Interpreting these probabilities relies on an understanding of independence and conditional probability, approachable through the analysis of two-way tables.

Converting a verbally-stated problem into the symbols and relations of probability requires careful attention to words such as *and*, *or*, *if*, and *all*, and to grammatical constructions that reflect logical connections. This is especially true when applying probability models to real-world problems, where simplifying assumptions are also usually necessary in order to gain at least an approximate solution.

Connections to Statistics and Expressions. Probability is the foundation for drawing valid conclusions from sampling or experimental data. Counting has an advanced connection with Expressions through Pascal's triangle and binomial expansions.

Core Skills · Students can and do:

1 Compute theoretical probabilities by systematically counting points in the sample space.

Make use of symmetry and equally likely outcomes. Include permutation and combination problems as long as small numbers are involved or technology is used, so that formulas are not required.

2 Interpret probabilities of compound events using concepts of independence and conditional probability.

Include reading conditional probabilities from two-way tables.

3 Compute probabilities of compound events.

Make use of the additive and multiplicative laws of probability, tree diagrams and frequency or relative frequency tables in real contexts. Do not emphasize fluency with the related formulas

4 Estimate probabilities empirically.

Include using data from simulations carried out with technology to estimate probabilities.

5 Identify and explain common misconceptions regarding probability.

Include misconceptions about long-run versus short-run behavior of relative frequencies (the law of large numbers). Include attention to the use and misuse of probability in the media, especially in terms of interpreting charts and tables and in the contextual meaning of terms connected to probability, such as 'odds' or 'risk.'

6 Adapt probability models to solve real-world problems.

Include the use of conditional probability to assess subsets of data (e.g., what does the data say about males and females separately). Include the use of independence as a simplifying assumption (e.g., find the probability that two students both contract the disease this year).

Statistics

Core Concepts · Students understand that:

A Statistical methods take variability into account to support making informed decisions based on quantitative studies designed to answer specific questions.

B Visual displays and summary statistics condense the information in data sets into usable knowledge.

C Randomness is the foundation for using statistics to draw conclusions when testing a claim or estimating plausible values for a population characteristic.

D The design of an experiment or sample survey is of critical importance to analyzing the data and drawing conclusions.

A Coherent Understanding of Statistics. Decisions or predictions are often based on data—numbers in context. These decisions or predictions would be easy if the data always sent a clear message, but the message is often obscured by variability in the data. Statistics provides tools for describing variability in data and for making informed decisions that take variability into account.

Data are gathered, displayed, summarized, examined and interpreted to discover patterns. Data can be summarized by a statistic measuring center, such as mean or median, and a statistic measuring spread, such as interquartile range or standard deviation. Different distributions can be compared numerically using these statistics or visually using plots. Which statistics to compare, and what the results of a comparison might mean, depend on the question to be investigated and the real-life actions to be taken.

Randomization has two important uses in drawing statistical conclusions. First, collecting data from a random sample of a population makes it possible to draw valid conclusions about the whole population, taking variability into account. Second, randomly assigning individuals to different treatments allows a fair comparison of the effectiveness of those treatments. A statistically significant outcome is one that is unlikely to be due to chance and this can be evaluated only under the condition of randomness.

In critically reviewing uses of statistics in public media and other reports, it is important to consider the study design, how the data were collected, and the analyses employed as well as the data summaries and the conclusions drawn.

Connections to Probability, Functions and Modeling. Valid conclusions about a population depend on designed simulations or other statistical studies using random sampling or assignment and rely on probability for their interpretation. Functional models may be used to approximate data. If the data are approximately linear, the relationship may be modeled with a trend line and the strength and direction of such a relationship may be expressed through a correlation coefficient. Technology facilitates the study of statistics by making it possible to simulate many possible outcomes in a short amount of time, and by generating plots, function models, trend lines and correlation coefficients.

Core Skills · Students can and do:

1 Formulate questions that can be addressed with data. Identify the relevant data, collect and organize it to respond to the question.

Include determining whether a question can best be addressed through a sample survey, randomized experiment or observational study. Include unbiased selection for a sample and randomization of assignment to treatment for an experiment.

2 Use appropriate displays and summary statistics for data.

Include univariate, bivariate, categorical and quantitative data. Include the thoughtful selection of displays and measures of center and spread to summarize data.

3 Interpret data displays and summaries critically; draw conclusions and develop recommendations.

Include paying attention to the context of the data, interpolating or extrapolating judiciously, and examining the effects of extreme values of the data on summary statistics of center and spread. Include data sets that follow a normal distribution. Include observing and interpreting linear trends in bivariate quantitative data.

4 Draw statistical conclusions involving population means or proportions using sample data.

Conclusions should be based on simulations or other informal techniques, rather than formulas.

5 Evaluate reports based on data.

Include looking for bias or flaws in the way the data were gathered or presented, as well as unwarranted conclusions, such as claims that confuse correlation with causation.

Core Standards for Reading Informational and Literary Texts

Standards for the Range and Content of Student Reading

A. **Complexity:** A crucial factor in readiness for college and careers is students' ability to comprehend complex texts independently. In college and careers, students will need to read texts characterized by demanding vocabulary, subtle relationships among ideas or characters, a nuanced rhetorical style and tone, and elaborate structures or formats. These challenging texts require the reader's close attention and often demand rereading in order to be fully understood.

B. **Quality:** The literary and informational texts chosen for study should be rich in content and in a variety of disciplines. All students should have access to and grapple with works of exceptional craft and thought both for the insights those works offer and as models for students' own thinking and writing. These texts should include classic works that have broad resonance and are alluded to and quoted often, such as influential political documents, foundational literary works, and seminal historical and scientific texts. Texts should also be selected from among the best contemporary fiction and nonfiction and from a diverse range of authors and perspectives.

C. **Vocabulary:** To be college and career ready, students must encounter and master a rich vocabulary. Complex texts often use challenging words, phrases, and terms that students typically do not encounter in their daily lives. Specific disciplines and careers have vocabularies of their own. Attentive reading of sophisticated works in a wide range of fields, combined with close attention to vocabulary, is essential to building comprehension and knowledge.

D. **Range:** Students must be able to read a variety of literature, informational texts, and multimedia sources in order to gain the knowledge base they need for college and career readiness.

   Literature: Literature enables students to access through imagination a wide range of experiences. By immersing themselves in literature, students enlarge their experiences and deepen their understanding of their own and other cultures. Careful reading of literature entails attentiveness to craft and details of design, which has broad value for students' work in college and career environments.

   Informational Text: Because most college and workplace reading is nonfiction, students need to hone their ability to acquire knowledge from informational texts. Workplace and discipline-specific reading will often require students to demonstrate persistence as they encounter a large amount of unfamiliar and often technical vocabulary and concepts. Students must demonstrate facility with the features of texts particular to a variety of disciplines, such as history, science, and mathematics.

   Multimedia Sources: Students must be able to integrate what they learn from reading text with what they learn from audio, video, and other digital media. Many of the same critical issues that students face when reading traditional printed texts will arise as they seek to comprehend multimedia, such as determining where the author has chosen to focus, evaluating evidence, and comparing different accounts of similar subjects.

E. **Quantity*:*** Students must have the capacity to handle independently the quantity of reading material, both in print and online, required in college and workforce training. Studies show that the amount of reading students face in high school is often far lower than that required for typical first-year college courses. Students need to be able to perform a close reading of a much higher volume of texts and to sort efficiently through large amounts of print and online information in search of specific facts or ideas.

Note: *The essential role of independence in college and career readiness:* The significant scaffolding that often accompanies reading in high school usually disappears in college and workforce training environments. Students must therefore have developed their ability to read texts of sufficient complexity, quality, and range on their own. To become independent, students must encounter unfamiliar texts presented without supporting materials.

Core Standards for Reading Informational and Literary Texts

Standards for Student Performance

1. Determine both what the text says explicitly and what can be inferred logically from the text.
2. Support or challenge assertions about the text by citing evidence in the text explicitly and accurately.
3. Discern the most important ideas, events, or information, and summarize them accurately and concisely.
4. Delineate the main ideas or themes in the text and the details that elaborate and support them.
5. Determine when, where, and why events unfold in the text, and explain how they relate to one another.
6. Analyze the traits, motivations, and thoughts of individuals in fiction and nonfiction based on how they are described, what they say and do, and how they interact.
7. Determine what is meant by words and phrases in context, including connotative meanings and figurative language.
8. Analyze how specific word choices shape the meaning and tone of the text.
9. Analyze how the text's organizational structure presents the argument, explanation, or narrative.
10. Analyze how specific details and larger portions of the text contribute to the meaning of the text.
11. Synthesize data, diagrams, maps, and other visual elements with words in the text to further comprehension.
12. Extract key information efficiently in print and online using text features and search techniques.
13. Ascertain the origin, credibility, and accuracy of print and online sources.
14. Evaluate the reasoning and rhetoric that support an argument or explanation, including assessing whether the evidence provided is relevant and sufficient.
15. Analyze how two or more texts with different styles, points of view, or arguments address similar topics or themes.
16. Draw upon relevant prior knowledge to enhance comprehension, and note when the text expands on or challenges that knowledge.
17. Apply knowledge and concepts gained through reading to build a more coherent understanding of a subject, inform reading of additional texts, and solve problems.
18. Demonstrate facility with the specific reading demands of texts drawn from different disciplines, including history, literature, science, and mathematics.

Note: *These Standards for Student Performance, as is the case for every strand, must be demonstrated across the range and content from the preceding page.* They are meant to apply to fiction and nonfiction. For example:

- "Determine when, where, and why events unfold" applies to plot and setting in literature as well as the sequence of a scientific procedure.
- "Analyze the traits, motivations, and thoughts of individuals" applies to studying characters in fiction and figures in historical texts.

Core Standards for Writing

Standards for the Range and Content of Student Writing

A. **Purpose:**

Make an Argument: While many high school students have experience presenting their opinions, they need to be able to make arguments supported by evidence in order to be ready for careers and college. Students must be able to frame the debate over a claim, present the reasoning and evidence for the argument, and acknowledge and address its limitations. In some cases, students will make arguments to gain entry to college or to obtain a job, laying out their qualifications or experience. In college, students might defend an interpretation of a work of literature or of history; in the workplace, employees might write to recommend a course of action.

Inform or Explain: In college and in workforce training, writing is a key means for students to show what they know and to share what they have seen. Writing to inform or explain often requires students to integrate complex information from multiple sources in a lucid fashion. Explanations can take the form of laying out facts about a new technology or documenting findings from historical research; well-crafted explanations often make fresh connections and express ideas creatively.

B. **Audience:** Students must adapt their writing so that it is appropriate to the audience by choosing words, information, structures, and formats that conform to the conventions of the discipline in which they are writing. The form and use of evidence in literary analysis, for example, are likely to be quite different from those in geology or business. Students must also be able to consider their audience's background knowledge and potential objections to an argument.

C. **Situation:**

On-demand Writing: Students must have the flexibility, concentration, and fluency to produce high-quality first-draft text under a tight deadline. College and career readiness requires that students be able to write effectively to a prompt on an exam or respond quickly yet thoughtfully to a supervisor's urgent request for information.

Writing over Time: Students must be able to revisit and make improvements to a piece of their writing over multiple drafts when circumstances encourage or require it. To improve writing through revision, students must be capable of distinguishing good changes from ones that would weaken the writing.

D. **Technology and Collaboration:** Technology offers students powerful tools for producing, editing, and distributing writing as well as for collaboration. Especially in the workplace, writers often use technology to produce documents and to provide feedback.

E. **Quantity:** The evidence is clear that, in order to become better writers, students must devote significant time to producing writing. Students must practice writing several analytical pieces each term if they are to achieve the deep analysis and interpretation of content expected for college and careers.

Note on narrative writing:

Narrative writing is an important mode of writing; it is also a component of making an argument and writing to inform or explain. Telling an interesting story effectively or providing an accurate account of a historical incident requires the skillful use of narrative techniques. Narrative writing requires that students present vivid, relevant details to situate events in a time and place and also craft a structure that lends a larger shape and significance to those details. As an easily grasped and widely used way to share information and ideas with others, narrative writing is a principal stepping-stone to writing forms directly relevant to college and career readiness.

Core Standards for Writing

Standards for Student Performance

1. Establish and refine a topic or thesis that addresses the specific task and audience.
2. Gather the information needed to build an argument, provide an explanation, or address a research question.
3. Sustain focus on a specific topic or argument.
4. Support and illustrate arguments and explanations with relevant details, examples, and evidence.
5. Create a logical progression of ideas or events, and convey the relationships among them.
6. Choose words and phrases to express ideas precisely and concisely.
7. Use varied sentence structures to engage the reader and achieve cohesion between sentences.
8. Develop and maintain a style and tone appropriate to the task, purpose, and audience.
9. Demonstrate command of the conventions of standard written English, including grammar, usage, and mechanics.
10. Represent and cite accurately the data, conclusions, and opinions of others, effectively incorporating them into one's own work while avoiding plagiarism.
11. Assess the quality of one's own writing, and, when necessary, strengthen it through revision.
12. Use technology as a tool to produce, edit, and distribute writing.

When **writing to inform or explain**, students must also do the following:

13. Synthesize information from multiple relevant sources, including graphics and quantitative information when appropriate, to provide an accurate picture of that information.
14. Convey complex information clearly and coherently to the audience through purposeful selection and organization of content.
15. Demonstrate understanding of content by reporting facts accurately and anticipating reader misconceptions.

When **writing arguments**, students must also do the following:

16. Establish a substantive claim, distinguishing it from alternate or opposing claims.
17. Link claims and evidence with clear reasons, and ensure that the evidence is relevant and sufficient to support the claims.
18. Acknowledge competing arguments or information, defending or qualifying the initial claim as appropriate.

Note: "The conventions of standard written English" encompass a range of commonly accepted language practices designed to make writing clear and widely understood. When formal writing contains errors in grammar, usage, and mechanics, its meaning is obscured, its message is too easily dismissed, and its author is often judged negatively. Proper sentence structure, correct verb formation, careful use of verb tense, clear subject-verb and pronoun-antecedent agreement, conventional usage, and appropriate punctuation are of particular importance to formal writing.

Core Standards for Speaking and Listening

Standards for the Range and Content of Student Speaking and Listening

A. **Group and One-to-One Situations:** Students are expected to be able to speak and listen effectively in both groups and one-to-one. Success in credit-bearing college coursework, whether in the humanities, mathematics, or the sciences, depends heavily on being able to take in and respond to the concepts and information conveyed in lectures and class discussions. Success in the workplace is similarly dependent on listening attentively to colleagues and customers and expressing ideas clearly and persuasively.

   These speaking and listening skills may need to be applied differently in different settings. The immediate communication between two people might be replaced by formal turn taking in large-group discussions. When working in classroom or workplace teams, students should be able to ask questions that initiate thoughtful discussions, gain the floor in respectful ways, and build on the contributions of others to complete tasks or reach consensus.

B. **Varied Disciplinary Content:** Students must adapt their speaking and listening to a range of disciplines to communicate effectively. Each academic discipline and industry has its own vocabulary and conventions; for instance, evidence is handled and discussed differently in literary analysis than in history or medicine or the sciences. College- and career-ready students must develop a foundation of disciplinary knowledge and conventions in order not only to comprehend the complexity of information and ideas but also to present and explain them.

C. **Multimedia Comprehension:** New technologies expand the role that speaking and listening skills will play in acquiring and sharing knowledge. Students will need to view and listen to diverse media to gain knowledge and also must integrate this information with what they learn through reading text online as well as in print. When speaking, students can draw on media to illustrate their points, make data and evidence vivid, and engage their audience. Multimedia accelerates the speed at which connections between reading, writing, speaking, and listening can be made, requiring students to be ready to use these skills nearly simultaneously.

Core Standards for Speaking and Listening

Standards for Student Performance

1. Select and use a format, organization, and style appropriate to the topic, purpose, and audience.
2. Present information, findings, and supporting evidence clearly and concisely.
3. Make strategic use of multimedia elements and visual displays of data to gain audience attention and enhance understanding.
4. Demonstrate command of formal Standard English when appropriate to task and audience.
5. Listen to complex information, and discern the main ideas, the significant details, and the relationships among them.
6. Follow the progression of the speaker's message, and evaluate the speaker's point of view, reasoning, and use of evidence and rhetoric.
7. Ask relevant questions to clarify points and challenge ideas.
8. Respond constructively to advance a discussion and build on the input of others.

Note: "Style appropriate to the topic, purpose, and audience" includes word choice specific to the demands of the discipline as well as delivery techniques such as gestures and eye contact that contribute to effective message delivery.

"Evaluate the speaker's point of view, reasoning, and use of evidence and rhetoric" includes distinguishing facts from opinions and determining whether the speaker is biased and evidence has been distorted.

Appendix B1.4

Common Core Draft English Language Arts K-12 Standards

Reading Standards for Literature K–5

Following are the standards for K–5, which relate to their College and Career Readiness counterparts by number. They offer a focus for instruction each year and help ensure that students gain adequate exposure to a range of texts and tasks. Rigor is also infused through the requirement that students read increasingly complex texts through the grades.

Kindergartners:	Grade 1 students:	Grade 2 students:
Key Ideas and Details		
1. With prompting and support, ask and answer questions about details and events in a text.	**1.** Ask and answer questions about key details and events in a text.	**1.** Ask and answer such questions as *who*, *what*, *where*, *when*, *why*, and *how* to demonstrate understanding of key details and events in a text.
2. Retell familiar stories.	**2.** Retell stories, demonstrating understanding of the central message or lesson.	**2.** Paraphrase stories, fables, folktales, or myths from diverse cultures and determine their lessons or morals.
3. Identify characters, settings, and key events in a story.	**3.** Describe characters, settings, and key events in a story.	**3.** Describe how characters in a story respond to key events and conflicts.
Craft and Structure		
4. Ask questions about unknown words in a text.	**4.** Identify words and phrases in stories or poems that suggest feelings or appeal to the senses.	**4.** Identify words and phrases (e.g., regular beats, rhymes, and repeated lines) that supply rhythm and meaning in a story, poem, or song.
5. Recognize common types of texts (e.g., storybooks, poems).	**5.** Distinguish major categories of writing from each other (e.g., stories and poems), drawing on a wide reading of a range of text types.	**5.** Refer to core elements of stories, plays, and myths, including characters, settings, and plots, when writing or speaking about a specific text.
6. Name the author and illustrator of a text and define the role of each.	**6.** Identify who is speaking at various points in a story, myth, fable, or narrative poem.	**6.** Distinguish between characters by speaking in a different voice for each character when reading aloud.
Integration of Knowledge and Ideas		
7. Relate pictures and illustrations to the overall story in which they appear.	**7.** Use pictures, illustrations, and details in a story to describe characters, events, or settings.	**7.** Explain how images and illustrations contribute to and clarify a story.
8. (Not applicable to literature)	**8.** (Not applicable to literature)	**8.** (Not applicable to literature)
9. Compare and contrast the adventures of characters in familiar stories.	**9.** Compare and contrast two or more versions of the same story (e.g., Cinderella stories) by different authors or from different cultures.	**9.** Compare and contrast characters or events from different stories addressing similar themes.
Range and Level of Text Complexity		
10. Read emergent-reader literature texts with purpose and understanding.	**10.** Read independently, proficiently, and fluently literature texts appropriately complex for grade 1.	**10.** Read literature independently, proficiently, and fluently within the grades 2–3 text complexity band; read texts at the high end of the range with scaffolding as needed.

Reading Standards for Literature K–5

Grade 3 students:	Grade 4 students:	Grade 5 students:
Key Ideas and Details		
1. Ask and answer questions to demonstrate understanding of a text, explicitly using the text as the basis for the answers.	**1.** Draw on details and examples from a text to support statements about the text.	**1.** Quote from a text to support statements about the text.
2. Use key supporting details in stories, fables, folktales, or myths from diverse cultures to determine the lessons or morals.	**2.** Summarize a text and derive a theme of a story, drama, or poem from details in the text.	**2.** Determine a theme of a text, drawing on how characters in a story respond to challenges or how the speaker in a poem reflects upon a topic; summarize the text.
3. Describe the main characters in a story (e.g., their traits, motivations, or feelings) and explain how they contribute to the sequence of events.	**3.** Describe in detail a character, event, or setting, drawing on specific details in the text (e.g., from a character's thoughts, words, deeds, or interactions with others).	**3.** Compare and contrast two or more characters, events, or settings in a text, drawing on specific details.
Craft and Structure		
4. Interpret key words and phrases in a text, distinguishing literal from figurative language.	**4.** Understand words and phrases in a text that allude to significant characters found in mythology (e.g., *Herculean*), drawing on a wide reading of classic myths from a variety of cultures and periods.	**4.** Identify how metaphors and similes as well as rhymes and other repetitions of sounds (e.g., alliteration) supply meaning and rhythm in a specific verse or stanza of a poem.
5. Demonstrate understanding of common features of legends, myths, and folk- and fairytales (e.g., heroes and villains; quests or challenges) when writing or speaking about classic stories from around the world.	**5.** Explain major differences between poems and prose, and refer to the structural elements of poems (e.g., stanza, verse, rhythm, meter) when writing or speaking about specific poems.	**5.** Explain major differences between drama and prose stories, and refer to the structural elements of drama (e.g., casts of characters, setting descriptions, dialogue, stage directions, acts, scenes) when writing or speaking about specific works of dramatic literature.
6. Distinguish their own point of view from those of characters in a story.	**6.** Compare the point of view from which different stories are narrated, including the difference between first- and third-person narrations.	**6.** Identify how a narrator's perspective or point of view influences how events are described.
Integration of Knowledge and Ideas		
7. Use information from illustrations and other visual elements in a text with the words to develop an understanding of the setting, characters, and plot.	**7.** Integrate information from several illustrations and other visual elements in a text with the words to develop an understanding of how the setting and characters change and the plot develops.	**7.** Explain how images, sounds, and movements contribute to an animated or live-action adaptation of a story, comparing that version to what they "see" or "hear" from reading the text.
8. (Not applicable to literature)	**8.** (Not applicable to literature)	**8.** (Not applicable to literature)
9. Compare and contrast the plots, settings, and themes of stories written by the same author about the same or similar characters (e.g., in books from a series).	**9.** Compare and contrast thematically similar tales, myths, and accounts of events from various cultures.	**9.** Compare the treatment of similar ideas and themes (e.g., opposition of good and evil) as well as character types and patterns of events in myths and other traditional literature from different cultures.
Range and Level of Text Complexity		
10. Read literature independently, proficiently, and fluently within the grades 2–3 text complexity band; read "stretch" texts in the grades 4–5 text complexity band with scaffolding as needed.	**10.** Read literature independently, proficiently, and fluently in the grades 4–5 text complexity band; read texts at the high end of the range with scaffolding as needed.	**10.** Read literature independently, proficiently, and fluently within the grades 4–5 text complexity band; read "stretch" texts in the grades 6–8 text complexity band with scaffolding as needed.

Reading Standards for Informational Text K–5

Kindergartners:	Grade 1 students:	Grade 2 students:
Key Ideas and Details		
1. With prompting and support, ask and answer questions about information and events a text.	**1.** Ask and answer questions about key information and events in a text.	**1.** Ask and answer such questions as *who*, *what*, *where*, *when*, *why*, and *how* to demonstrate understanding of key information and events in a text.
2. Identify the main topic and main ideas of a text.	**2.** Identify the main topic, main ideas, and key details of a text.	**2.** Identify the main focus of a multiparagraph text as well as that of specific paragraphs within the text.
3. With prompting and support, describe the connection between two events or ideas in a text.	**3.** Describe the connection between two key events or ideas in a text.	**3.** Describe the connection between two or more historical events or scientific concepts in a text.
Craft and Structure		
4. Ask questions about unknown words in a text.	**4.** Learn and determine the meanings of words and phrases encountered in text relevant to a *grade 1 topic or subject area*.	**4.** Learn and determine the meanings of words and phrases encountered in text relevant to a *grade 2 topic or subject area*.
5. Locate basic information in a text.	**5.** Describe how a text groups information into general categories (e.g., cows, pigs, and horses are *farm animals*).	**5.** Know and use various text features (e.g., captions, headings, tables of contents, glossaries, indexes, electronic menus, icons) to locate key facts or information.
6. Name the author and illustrator of a text and define the role of each.	**6.** Distinguish between information provided by pictures or illustrations and that provided by the words in a text.	**6.** Identify the main purpose of a text, including what question the author aims to answer or what the author aims to explain or describe.
Integration of Knowledge and Ideas		
7. Relate pictures or illustrations to the overall text in which they appear.	**7.** Use pictures, illustrations, and details in a text to describe the key ideas.	**7.** Explain how images and illustrations contribute to and clarify a text.
8. With prompting and support, recognize cause-and-effect relationships in a text.	**8.** Identify cause-and-effect relationships in a text.	**8.** Describe how specific causes link key events or ideas together in a text.
9. With prompting and support, recognize basic similarities in and differences between two texts on the same topic (e.g., in illustrations or descriptions).	**9.** Identify similarities in and differences between two texts on the same topic (e.g., in illustrations or descriptions).	**9.** Describe similarities in and differences between two texts on the same topic.
Range and Level of Text Complexity		
10. Read emergent-reader informational texts with purpose and understanding.	**10.** Read independently, proficiently, and fluently informational texts appropriately complex for grade 1.	**10.** Read informational texts independently, proficiently, and fluently within the grades 2–3 text complexity band; read texts at the high end of the range with scaffolding as needed.

Reading Standards for Informational Text K–5

Grade 3 students:	Grade 4 students:	Grade 5 students:
Key Ideas and Details		
1. Ask and answer questions to demonstrate understanding of a text, explicitly using the text as the basis for the answers.	**1.** Draw on details and examples from a text to support statements about the text.	**1.** Quote from a text to support statements about the text.
2. Determine the main idea of a text and explain how it is supported by the key details.	**2.** Determine the main idea and supporting details of a text; summarize the text.	**2.** Determine two or more main ideas and how they are supported by details; summarize the text.
3. Describe the relationship between historical or scientific events or ideas in a text, using knowledge of connective devices that pertain to time, sequence, and cause and effect.	**3.** Describe the sequence of events in an historical or scientific account, including what happened and why, based on specific information in a text.	**3.** Explain the relationships between two or more historical events or scientific concepts by drawing on specific information from one or more texts.
Craft and Structure		
4. Learn and determine the meanings of general academic language and domain-specific words and phrases encountered in a text relevant to a *grade 3 topic or subject area*.	**4.** Learn and determine the meanings of general academic language and domain-specific words or phrases encountered in a text relevant to a *grade 4 topic or subject area*.	**4.** Learn and determine the meanings of general academic language and domain-specific words and phrases encountered in a text relevant to a *grade 5 topic or subject area*.
5. Use text features (e.g., bold print, key words, topic sentences, hyperlinks, electronic menus, icons) to locate information quickly and efficiently.	**5.** Use text features and search tools to locate and process information relevant to a given topic.	**5.** Describe how events, ideas, or information are organized (e.g., chronology, comparison, cause and effect) in a whole text or in part of a text.
6. Compare what is presented in a text with relevant prior knowledge and beliefs, making explicit what is new or surprising.	**6.** Compare an eyewitness account to a secondhand account of the same event or topic.	**6.** Analyze two accounts of the same event or topic and describe important similarities and differences in the details they provide.
Integration of Knowledge and Ideas		
7. Integrate information from illustrations and other visual elements (e.g., maps, photographs) in print and digital texts as an aid to understanding where, when, why, and how key events occur.	**7.** Interpret factual information presented graphically or visually (e.g., in charts, diagrams, time lines, animations, and interactive elements) and explain how the information contributes to understanding a print or digital text.	**7.** Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.
8. Describe the logical connection between paragraphs and between sentences in a text (e.g., comparison, sequence, example).	**8.** Explain how an author uses evidence to support his or her claims in a text.	**8.** Explain how an author uses evidence to support his or her claims in a text, identifying what evidence supports which claim(s).
9. Compare and contrast information drawn from two texts on the same subject.	**9.** Describe how two or more texts on the same subject build on one another; provide a coherent picture of the information they convey.	**9.** Integrate information from several texts on the same subject in order to write or speak about the subject knowledgeably.
Range and Level of Text Complexity		
10. Read informational texts independently, proficiently, and fluently within the grades 2–3 text complexity band; read "stretch" texts in the grades 4–5 text complexity band with scaffolding as needed.	**10.** Read informational texts independently, proficiently, and fluently within the grades 4–5 text complexity band; read texts at the high end of the range with scaffolding as needed.	**10.** Read informational texts independently, proficiently, and fluently within the grades 4–5 text complexity band; read "stretch" texts in the grades 6–8 text complexity band with scaffolding as needed.

Reading Standards: Foundational Skills (K–3)

These standards are directed toward fostering students' understanding and working knowledge of concepts of print, the alphabetic principle, and other basic conventions of the English writing system. These Foundational Skills are not an end in and of themselves; rather, they are necessary and important components of an effective, comprehensive reading program designed to develop proficient readers with the capacity to comprehend texts across a range of types and disciplines.

Kindergartners:

Print Concepts

1. Demonstrate understanding of the organization and basic features of print.

a. Identify the front cover, back cover, and title page of a book.
b. Follow words from left to right, top to bottom, and page by page.
c. Understand that words are separated by spaces in print.
d. Recognize and name all upper- and lowercase letters of the alphabet.

Phonological Awareness

2. Demonstrate understanding of spoken words, syllables, and phonemes.

a. Recite and produce rhyming words.
b. Count, pronounce, blend, and segment syllables in spoken words.
c. Count individual words in spoken phrases or simple sentences.
d. Blend and segment consonants and rimes of spoken words (/*g*/ - /*oat*/, /*bl*/ - /*ack*/).
e. Demonstrate phonemic awareness by isolating and pronouncing the initial, medial vowel, and final phonemes (sounds) in three-phoneme (CVC) words (e.g., /*save*/, /*ham*/).[1] (This does not include CVCs ending with /*l*/, /*r*/, or /*x*/.)
f. Add or substitute individual phonemes in simple, one-syllable words to make new words (e.g., /*at*/ → /*sat*/ → /*mat*/ → /*map*/).

Grade 1 students:

1. (Not applicable)

2. Demonstrate understanding of spoken words, syllables, and phonemes.

a. Aurally distinguish long from short vowel sounds in spoken single-syllable words (e.g., /*tap*/ vs. /*tape*/, /*sock*/ vs. /*soak*/, /*sit*/ vs. /*sight*/).
b. Orally produce single-syllable words by blending phonemes, including consonant blends (e.g., /*cats*/, /*black*/, /*blast*/).
c. Isolate and pronounce initial, medial vowel, and final phonemes (sounds) in spoken single-syllable words (e.g., *f*ast, *f*a*s*t, *fas*t).
d. Segment spoken single-syllable words into their complete sequence of individual phonemes (e.g., lap: /l/-/a/-/p/ → /f/-/l/-/a/-/p/).

[1]Words, syllables, or phonemes written in /slashes/ refer to their pronunciation or phonology. Thus, /CVC/ is a word with three phonemes regardless of the number of letters in the spelling of the word.

Reading Standards: Foundational Skills (K–3)

Kindergartners:	Grade 1 students:	Grade 2 students:	Grade 3 students:
Phonics and Word Recognition			
3. Know and apply grade-level phonics and word analysis skills in decoding words. a. Demonstrate basic knowledge of letter-sound correspondences by producing the primary or most frequent sound for each consonant. b. Associate the long and short sounds with the graphemes for the five major vowels. c. Read at least twenty-five very-high-frequency words by sight (e.g., *the*, *of*, *to*, *you*, *she*, *my*, *is*, *are*, *do*, *does*). d. Distinguish between similarly spelled words by identifying the sounds of the letters that differ (e.g., ***b**at* vs. ***s**at*, *ca**t*** vs. *ca**n***, *h**i**t* vs. *h**o**t*).	**3.** Know and apply grade-level phonics and word analysis skills in decoding words. a. Know the spelling-sound correspondences for common consonant digraphs (e.g., *-ll*, *-ck*, *wr-*, *sh*). b. Decode regularly spelled one-syllable words (e.g., *lock*, *much*, *see*, *rain*, *slide*, *bake*, *bring*). c. Know final *-e* (e.g., *take*, *side*) and common vowel team conventions (e.g., *rain*, *day*, *week*, *seat*, *road*, *show*) for representing long vowel sounds. d. Use knowledge that every syllable must have a vowel sound to determine the number of syllables in a printed word. e. Decode two-syllable words following basic patterns (e.g., *rabbit*) by breaking the words into syllables. f. Read words with inflectional endings (e.g., *-s*, *-es*, *-ed*, *-ing*, *-er*, *-est*). g. Recognize and read grade-appropriate irregularly spelled words (e.g., *said*, *were*, *could*, *would*, *their*, *there*, *through*, *none*, *both*).	**3.** Know and apply grade-level phonics and word analysis skills in decoding words. a. Distinguish long and short vowels when reading regularly spelled one-syllable words (e.g., *hop* vs. *hope*, *men* vs. *mean*, *fell* vs. *feel*, *bend* vs. *bead*). b. Know spelling-sound correspondences for additional common vowel teams (e.g., *loud*, *cow*, *look*, *loop*, *boy*, *boil*). c. Decode regularly spelled two-syllable words with long vowels (e.g., *surprise*, *remain*, *needle*, *baby*, *paper*). d. Decode words with common prefixes and suffixes (e.g., *unhappy*, *carefully*, *goodness*, *unbutton*). e. Identify words with inconsistent but common spelling-sound correspondences (e.g., *heat* vs. *head*, *roll* vs. *doll*, *hint* vs. *hind*). f. Recognize and read grade-appropriate irregularly spelled words (e.g., *through*, *eyes*, *busy*, *ocean*, *island*, *people*).	**3.** Know and apply grade-level phonics and word analysis skills in decoding words. a. Identify and know the meaning of the most common prefixes and derivational suffixes (e.g., *un-*, *re-*, *mis-*, *-ful*, *-less*, *-able*). b. Decode words with common Latin suffixes (e.g., *-tion/-sion*, *-ture*, *-tive/-sive*, *-ify*, *-ity*, *-ment*). c. Decode multisyllable words (e.g., *supper*, *chimpanzee*, *refrigerator*, *terrible*, *frightening*). d. Read grade-appropriate irregularly spelled words (e.g., *although*, *science*, *stomach*, *machine*).
Fluency			
4. Read with sufficient accuracy and fluency to support comprehension. a. Read emergent-reader texts with purpose and understanding.	**4.** Read with sufficient accuracy and fluency to support comprehension. a. Read on-level text with purpose and understanding. b. Read on-level text orally with accuracy, appropriate rate, and expression on successive readings. c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.	**4.** Read with sufficient accuracy and fluency to support comprehension. a. Read on-level text with purpose and understanding. b. Read on-level text orally with accuracy, appropriate rate, and expression on successive readings. c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.	**4.** Read with sufficient accuracy and fluency to support comprehension. a. Read on-level text with purpose and understanding. b. Read on-level text orally with accuracy, appropriate rate, and expression on successive readings c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.

Writing Standards K–5

Following are the standards for K–5, which relate to their College and Career Readiness counterparts by number. They offer a focus for instruction in each year to help ensure that students gain adequate exposure to a range of skills and applications. Growth in writing ability is characterized by an increasing sophistication in all aspects of language use, from vocabulary and syntax to the development and organization of ideas. At the same time, the content and sources that students address in their writing grow in demand every year.

Kindergartners:	Grade 1 students:	Grade 2 students:
Text Types and Purposes		
1. Use a combination of drawing, dictating, and writing to compose opinions in which they tell a reader the name of a book or the topic they are "writing" about and give an opinion about the topic (e.g., *My favorite book is . . .*).	**1.** Write opinions in which they introduce the topic or the name of the book they are writing about, state an opinion, and provide a reason for their opinion.	**1.** Write opinions in which they introduce the topic or book(s) directly, state an opinion, provide reasons and details to support opinions, use words to link opinions and reason(s) (e.g., *because*, *and*, *also*), and provide a sense of closure.
2. Use a combination of drawing, dictating, and writing to compose informative and explanatory texts in which they name what they are "writing" about and share some information about it.	**2.** Write informative and explanatory texts in which they name a topic, supply some facts relevant to the topic, and provide some sense of closure.	**2.** Write informative and explanatory texts in which they introduce a topic, use facts and definitions to develop points, present similar information together using headers to signal groupings when appropriate, and provide a concluding sentence or section.
3. Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order that they occurred, and provide a reaction to what happened.	**3.** Write narratives in which they include at least two or more appropriately sequenced events, use time cue words to signal event order, and provide some details and a sense of closure.	**3.** Write narratives in which they recount a well-elaborated event or series of events, use temporal words and phrases to signal event order, include details to tell what the narrator did, thought, and felt, and provide closure.
Production and Distribution of Writing		
4. (Begins in grade 3)	**4.** (Begins in grade 3)	**4.** (Begins in grade 3)
5. With guidance and support from adults, add details to strengthen writing as needed through revision.	**5.** With guidance and support from adults, add details to strengthen writing as needed through revision.	**5.** With guidance from adults, strengthen writing as needed by revising and editing.
6. (Begins in grade 2)	**6.** (Begins in grade 2)	**6.** With guidance from adults, use technology to produce writing.
Research to Build Knowledge		
7. (Begins in grade 1)	**7.** Participate in shared research and writing projects (e.g., exploring a number of books on a given topic).	**7.** Participate in shared research and writing projects (e.g., exploring a number of books on a given topic).
8. Gather information from experiences or provided text sources to answer a specific question.	**8.** Gather information from experiences or provided text sources to answer a specific question.	**8.** Gather information from experiences or provided text sources to answer a specific question.
9. (Begins in grade 4)	**9.** (Begins in grade 4)	**9.** (Begins in grade 4)
Range of Writing		
10. (Begins in grade 4)	**10.** (Begins in grade 4)	**10.** (Begins in grade 4)

Grade 3 students:	Grade 4 students:	Grade 5 students:
Text Types and Purposes		
1. Write opinions in which they: a. Introduce the topic or book(s) directly, state an opinion relative to the topic, and create an organizing structure that lists reasons. b. Provide reasons that support the opinion. c. Use appropriate words to link opinions and reason(s) (e.g., *because*, *therefore*, *in order to*, *since*, *for example*). d. Provide a sense of closure.	**1.** Write opinions in which they: a. Introduce an opinion about a concrete issue or topic and create an organizing structure where related ideas are grouped to support the writer's purpose. b. Provide reasons that are supported by facts and details. c. Link reasons and details together using words and phrases (e.g., *so*, *then*, *for instance*, *in addition*). d. Adopt an appropriate style for sharing and defending an opinion. e. Provide a concluding statement or section.	**1.** Write opinions in which they: a. Introduce an opinion about a concrete issue or topic and create an organizing structure where ideas are logically grouped to support the writer's purpose. b. Provide logically ordered reasons that are supported by facts and details. c. Link reasons and details together using words, phrases, and clauses (e.g., *consequently*, *generally*, *specifically*). d. Adopt an appropriate style for sharing and defending an opinion. e. Provide a concluding statement or section.
2. Write informative/explanatory pieces in which they: a. Introduce a topic and create an organizational structure that presents similar information together. b. Provide some details to develop points. c. Use linking words (e.g., *also*, *another*, *and*, *more*) to connect ideas within categories of information. d. Include a concluding sentence or section.	**2.** Write informative/explanatory pieces in which they: a. State the topic clearly and group related information in paragraphs and sections. b. Develop the topic using facts, concrete details, quotations, or other information and examples. c. Use appropriate links to join ideas within categories of information. d. Employ domain-specific vocabulary when appropriate. e. Provide a conclusion related to the information or explanation offered.	**2.** Write informative/explanatory pieces in which they: a. State the topic clearly, provide a general observation and focus, and group related information logically. b. Develop the topic using relevant facts, concrete details, quotations, or other information and examples. c. Use appropriate links to join ideas within and across categories of information. d. Employ domain-specific vocabulary and some technical terms when appropriate. e. Provide a conclusion related to the information or explanation offered.
3. Write narratives in which they: a. Establish a situation, introduce a narrator and/or characters, and organize an event sequence that unfolds naturally. b. Employ dialogue and descriptions of characters' actions, thoughts, and feelings. c. Use temporal words and phrases to signal event sequence. d. Provide a sense of closure.	**3.** Write narratives in which they: a. Orient the reader by establishing a situation, introduce a narrator and/or characters, and organize an event sequence that unfolds naturally. b. Use narrative techniques such as dialogue and description to develop events and show the characters' external behaviors and internal responses to events. c. Use a variety of temporal words and phrases to manage the sequence of events. d. Use concrete and sensory words and phrases to convey events and experiences precisely. e. Provide a satisfying conclusion that follows from the narrative's events.	**3.** Write narratives in which they: a. Engage and orient the reader by establishing a situation, introduce a narrator and/or characters, and create an organization that sequences events naturally and logically. b. Use narrative techniques such as dialogue, pacing, and description to develop events and show characters' external behaviors and internal responses. c. Use a variety of temporal words, phrases, and clauses to manage the sequence of events. d. Use well-chosen words and phrases to convey events and experiences precisely. e. Provide a satisfying conclusion that follows from the narrative's events.

Grade 3 students:	Grade 4 students:	Grade 5 students:
Production and Distribution of Writing		
4. (Begins in grade 4).	**4.** Produce coherent and clear writing in which the organization, development, substance, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in Standards 1–3 above.)	**4.** Produce coherent and clear writing in which the organization, development, substance, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in Standards 1–3 above.)
5. With guidance and support from peers and adults, strengthen writing as needed by revising and editing.	**5.** With guidance and support from peers and adults, strengthen writing as needed by planning, revising, and editing.	**5.** With guidance and support from peers and adults, strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
6. With guidance and support from adults, use technology to produce and publish writing.	**6.** With guidance and support from adults, use technology to produce, publish, and interact with others about writing.	**6.** With guidance and support from adults, use technology, including the Internet, to produce, publish, and interact with others about writing.
Research to Build Knowledge		
7. Perform short, focused research tasks that build knowledge about a topic.	**7.** Perform short, focused research tasks that build knowledge through investigation of different aspects of a single topic.	**7.** Perform short, focused research tasks that build knowledge through investigation of different aspects of a topic using several sources.
8. Gather information from experience as well as print and digital resources, take simple notes on sources, and sort evidence into provided categories.	**8.** Gather relevant information from experience as well as print and digital sources, take notes and categorize evidence, restate information in written text, and provide basic bibliographic information.	**8.** Gather relevant information from experience as well as print and digital sources; summarize or paraphrase information in notes and finished work, and provide basic bibliographic information.
9. (Begins in grade 4)	**9.** Write in response to literary or informational sources, drawing evidence from the text to support analysis and reflection as well as to describe what they have learned: a. Apply *grade 4 reading standards* to informational texts (e.g., "Explain how an author uses evidence to support his or her claims in a text"). b. Apply *grade 4 reading standards* to literature (e.g., "Describe in detail a character, event, or setting, drawing on specific details in the text (e.g., from a character's thoughts, words, deeds, and interactions with others").	**9.** Write in response to literary or informational sources, drawing evidence from the text to support analysis and reflection as well as to describe what they have learned: a. Apply *grade 5 reading standards* to informational texts (e.g., "Explain how an author uses evidence to support his or her claims in a text, identifying what evidence supports which claim(s)"). b. Apply *grade 5 reading standards* to literature (e.g., "Compare and contrast two or more characters, events, or settings in a text, drawing on specific details").
Range of Writing		
10. (Begins in grade 4)	**10.** Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.	**10.** Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

Speaking and Listening Standards K–5

Following are the standards for K–5, which relate to their College and Career Readiness counterparts by number. They offer a focus for instruction in each year to help ensure that students gain adequate exposure to a range of skills and applications.

Kindergartners:	Grade 1 students:	Grade 2 students:
Comprehension and Collaboration		
1. Participate in conversations with peers and adults about *kindergarten topics and texts* being studied in class. a. Listen to others and take turns speaking. b. Continue a conversation through several exchanges.	**1.** Initiate and participate in conversations with peers and adults about *grade 1 topics and texts* being studied in class. a. Follow agreed-upon rules for discussions, such as listening to others, speaking one at a time, and gaining the floor in respectful ways. b. Respond to the comments of others through multiple exchanges. c. Ask questions to clear up confusion about a topic.	**1.** Engage in group discussions on *grade 2 topics and texts* being studied in class. a. Follow agreed-upon rules for discussions, such as listening to others, speaking one at a time, and gaining the floor in respectful ways. b. Stay on topic by linking their own additions to the conversation to the previous remarks of others. c. Ask for clarification and further explanation as needed. d. Extend their ideas and understanding in light of the discussions.
2. Confirm understanding of information presented orally or through media by asking and answering questions about key details.	**2.** Confirm understanding of information presented orally or through media by restating key elements and asking and answering questions about key details.	**2.** Retell key details or ideas presented orally or through media.
3. Ask questions to get information, seek help, or clarify something that is not understood.	**3.** Ask questions to get information, clarify something that is not understood, or gather additional information.	**3.** Ask and answer questions about information presented orally or visually in order to deepen their understanding or clarify comprehension.
Presentation of Knowledge and Ideas		
4. Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.	**4.** Describe familiar people, places, things, and events with relevant details, expressing ideas and feelings clearly.	**4.** Recount stories or experiences with appropriate facts and descriptive details.
5. (Begins in grade 4)	**5.** (Begins in grade 4)	**5.** (Begins in grade 4)
6. (Begins in grade 1)	**6.** Produce complete sentences when appropriate to task and situation, using correct verb tenses to convey a sense of past, present, and future. (See "Conventions" in Language, pages 22–26, for specific demands.)	**6.** Produce complete sentences when appropriate to task and situation to provide requested detail or clarification, ensuring subject-verb agreement and correct use of irregular plural nouns. (See "Conventions" in Language, pages 22–26, for specific demands.)

Grade 3 students:	Grade 4 students:	Grade 5 students:
Comprehension and Collaboration		
1. Initiate and engage in group discussions on *grade 3 topics and texts* being studied in class. a. Follow agreed-upon rules for discussions and carry out assigned roles in small-group discussions. b. Pose relevant questions and link their own additions to the conversation to the previous remarks of others. c. Extend their ideas and understanding in light of the discussions.	**1.** Initiate and engage in group discussions on *grade 4 topics and texts* being studied in class. a. Come to discussions prepared, having read required material; in discussions, explicitly draw on that material and other information known about the topic. b. Pose and respond to questions as well as build on the ideas of previous speakers. c. Acknowledge new information provided by others and incorporate it into their own thinking as appropriate.	**1.** Initiate and engage in group discussions on *grade 5 topics and texts* being studied in class. a. Come to discussions prepared, having read the required material; in discussions, explicitly draw on that material and other information known about the topic. b. Respond to questions with elaboration, make comments that contribute to the topic, and build on the ideas of previous speakers. c. Ask questions to clarify or follow up on ideas or information presented orally or through media. d. Draw conclusions based on the ideas of others and incorporate them into their own thinking as appropriate.
2. Identify the main ideas and supporting details of information presented graphically, visually, orally, or multimodally.	**2.** Paraphrase the key information or ideas presented graphically, visually, orally, or multimodally.	**2.** Summarize the key ideas and supporting details presented graphically, visually, orally, or multimodally.
3. Ask and answer questions about presentations, offering appropriate elaboration and detail.	**3.** Identify the claims and supporting evidence used by a speaker or a presenter.	**3.** Summarize the claims made by a speaker or presenter and explain how each claim is supported with evidence.
Presentation of Knowledge and Ideas		
4. Report on a topic or recount stories or experiences with appropriate facts and descriptive details.	**4.** Report on events, topics, or texts in an organized manner, using appropriate, specific facts and descriptive details to support main ideas.	**4.** Report on events, topics, or texts in a focused, organized manner, sequencing ideas logically and using appropriate, specific facts, details, examples, or other information to develop main ideas.
5. (Begins in grade 4)	**5.** Incorporate visual displays and digital media into presentations when appropriate.	**5.** Incorporate visual displays and digital media into presentations when appropriate.
6. Speak coherently, employing a variety of tenses and ensuring subject-verb and pronoun-antecedent agreement. (See "Conventions" in Language, pages 22–26, for specific demands.)	**6.** Differentiate between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion); use formal English when appropriate to task and situation. (See "Conventions" in Language, pages 22–26, for specific demands.)	**6.** Adapt speech to a variety of contexts and communicative tasks, using formal English when appropriate to task and situation. (See "Conventions" in Language, pages 22–26, for specific demands.)

Language Standards K–5

Following are the standards for K–5, which relate to their College and Career Readiness counterparts by number. They offer a focus for instruction in each year to help ensure that students gain adequate exposure to a range of skills and applications.

Kindergartners:	Grade 1 students:	Grade 2 students:
Conventions in Writing and Speaking		
1. Observe conventions of grammar and usage. a. Print most upper- and lowercase letters. b. Write a letter or letters for most consonant and short-vowel sounds (phonemes). c. Form regular plural nouns orally by adding /s/ or /es/ (e.g., *dog*, *dogs*; *wish*, *wishes*) when speaking. d. Understand and use the most frequently occurring prepositions in English (e.g., *to/from*, *in/out*, *on/off*, *for*, *of*, *by*, *with*) when speaking. e. Produce and expand complete sentences in shared language and writing activities. f. Understand and use question words (e.g., *who*, *what*, *where*, *when*, *why*, *how*) in discussions.	**1.** Observe conventions of grammar and usage. a. Print all upper- and lowercase letters. b. Use singular and plural nouns with matching verbs in simple sentences (e.g., *He hops*; *We hop*). c. Use subject, object, and possessive pronouns in speaking and writing (e.g., *I*, *me*, *my*; *they*, *them*, *their*). d. Use verbs to convey a sense of past, present, and future in writing and speaking (e.g., *Yesterday I walked home*; *Today I walk home*; *Tomorrow I will walk home*). e. Understand and use frequently occurring prepositions in English (e.g., *during*, *beyond*, *toward*). f. Produce and expand complete declarative, interrogative, imperative, and exclamatory sentences in response to questions and prompts. g. Understand that, minimally, every sentence must be about something (the subject) and tell something (the predicate) about its subject.	**1.** Observe conventions of grammar and usage. a. Form common irregular plural nouns (e.g., *feet*, *children*, *teeth*, *mice*, *fish*). b. Form the past tense of common irregular verbs (e.g., *sat*, *hid*, *told*). c. Produce and expand complete declarative, interrogative, imperative, and exclamatory sentences. d. Produce and expand complete sentences to provide requested detail or clarification.
2. Observe conventions of capitalization, punctuation, and spelling. a. Capitalize the first word in a sentence and the pronoun *I*. b. Name and identify end punctuation, including periods, question marks, and exclamation points. c. Spell simple words phonetically using knowledge of sound-letter relationships.	**2.** Observe conventions of capitalization, punctuation, and spelling. a. Capitalize names, places, and dates. b. Use end punctuation for sentences, including periods, question marks, and exclamation points. c. Use commas in dates and to separate single words in a series. d. Use conventional spelling for words with common spelling patterns and for common irregular words. e. Use phonetic spellings for untaught words, drawing on phonemic awareness and spelling conventions. f. Form new words through addition, deletion, and substitution of sound and letters (e.g., *an* → *man* → *mat* → *mast* → *must* → *rust* → *crust*).	**2.** Observe conventions of capitalization, punctuation, and spelling. a. Capitalize holidays, product names, geographic names, and important words in titles. b. Use commas in greetings and closings of letters. c. Use apostrophes to form contractions and common possessives. d. Generalize learned spelling patterns when writing words (e.g., *cage* → *badge*; *boy* → *boil*; *paper* → *copper*). e. Consult reference materials, including beginning dictionaries, as needed to check and correct spellings.
3. (Begins in grade 3)	**3.** (Begins in grade 3)	**3.** (Begins in grade 3)

Kindergartners:	Grade 1 students:	Grade 2 students:
Vocabulary Acquisition and Use		
4. Determine word meanings (*based on kindergarten reading*). a. Sort common objects into categories (e.g., shapes, foods) to gain a sense of the concepts the categories represent. b. Identify new meanings for familiar words and apply them accurately (e.g., knowing *duck* as a bird and learning the verb *to duck*). c. Use the most common affixes in English (e.g., *-ed*, *-s*, *re-*, *un-*, *pre-*, *-ful*, *-less*) as a clue to the meaning of an unknown word.	**4.** Determine word meanings (*based on grade 1 reading*). a. Sort words into categories (e.g., colors, clothing) to gain a sense of the concepts the categories represent. b. Use sentence-level context as a clue to the meaning of an unknown word. c. Use common affixes in English as a clue to the meaning of an unknown word. d. Define words by category and by one or more key attributes (e.g., a *duck* is a bird that swims; a *tiger* is a large cat with stripes). e. Demonstrate understanding of the concept of multiple-meaning words (e.g., *match*, *kind*, *play*) by identifying meanings of some grade-appropriate examples of such words.	**4.** Determine word meanings (*based on grade 2 reading*). a. Determine or clarify the meaning of unknown or multiple-meaning words through the use of one or more strategies, such as understanding how the word is used in a sentence; analyzing the word's sounds, spelling, and meaningful parts; and consulting glossaries or beginning dictionaries, both print and digital. b. Explain the meaning of grade-appropriate compound words (e.g., *birdhouse*, *lighthouse*, *housefly*; *bookshelf*, *notebook*, *bookmark*). c. Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., *addition*, *additional*). d. Determine the meaning of the new word formed when a known prefix is added to a known word (e.g., *happy/unhappy*, *tell/retell*).
5. Understand word relationships. a. Build real-life connections between words and their use (e.g., note places at school that are *colorful*). b. Distinguish shades of meaning among verbs describing the same general action (e.g., *walk*, *march*, *strut*, *prance*) by acting out the meanings. c. Use common adjectives to distinguish objects (e.g., the *small blue* square; the *shy white* rabbit). d. Demonstrate understanding of common verbs and adjectives by relating them to their opposites (antonyms).	**5.** Understand word relationships. a. Build real-life connections between words and their use (e.g., note places at home that are *cozy*). b. Distinguish shades of meaning among verbs differing in manner (e.g., *look*, *peek*, *glance*, *stare*, *glare*, *scowl*) and adjectives differing in intensity (e.g., *large*, *gigantic*) by defining, choosing, or acting out the meanings.	**5.** Understand word relationships. a. Build real-life connections between words and their use (e.g., describe foods that are *spicy* or *juicy*). b. Distinguish shades of meaning among related verbs (e.g., *toss*, *throw*, *hurl*) and related adjectives (e.g., *thin*, *slender*, *skinny*, *scrawny*).
6. Use newly learned words acquired through conversations, reading, and responding to texts.	**6.** Use newly learned words acquired through conversations, reading, and responding to texts.	**6.** Use newly learned words acquired through conversations, reading, and responding to texts.

Grade 3 students:	Grade 4 students:	Grade 5 students:
Conventions in Writing and Speaking		
1. Observe conventions of grammar and usage. a. Explain the function of nouns, pronouns, verbs, adjectives, and adverbs in general and their functions in specific sentences. b. Form and use the simple (e.g., *I walked*, *I walk*, *I will walk*) verb tenses. c. Ensure subject-verb and pronoun-antecedent agreement.* d. Produce simple, compound, and complex sentences.	**1.** Observe conventions of grammar and usage. a. Form and use the progressive (e.g., *I was walking*, *I am walking*, *I will be walking*) verb aspects. b. Form and use adjectives and adverbs (including comparative and superlative forms), placing them appropriately within sentences.* c. Produce complete sentences, avoiding rhetorically poor fragments and run-ons.* d. Correctly use frequently confused words (e.g., *to*, *too*, *two*; *there*, *their*).*	**1.** Observe conventions of grammar and usage. a. Form and use the perfect (e.g., *I had walked*, *I have walked*, *I will have walked*) verb aspects. b. Recognize and correct inappropriate shifts in verb tense and aspect.*
2. Observe conventions of capitalization, punctuation, and spelling. a. Use correct capitalization. b. Use quotation marks in dialogue. c. Use conventional spelling for high-frequency and other studied words and for adding suffixes to base words (e.g., *sitting*, *smiled*, *cries*, *happiness*). d. Use spelling patterns and generalizations (e.g., word families, position-based spellings, syllable patterns, ending rules, meaningful word parts) in writing words. e. Consult reference materials, including dictionaries, as needed to check and correct spellings.	**2.** Observe conventions of capitalization, punctuation, and spelling. a. Use quotation marks to mark direct speech and quotations from a text. b. Spell grade-appropriate words correctly, consulting references as needed.	**2.** Observe conventions of capitalization, punctuation, and spelling. a. Use punctuation to separate items in a series.* b. Use a comma to separate an introductory element from the rest of the sentence. c. Use underlining, quotation marks, or italics to indicate titles of works. d. Spell grade-appropriate words correctly, consulting references as needed.
3. Make effective language choices. a. Use words for effect.*	**3.** Make effective language choices. a. Use punctuation for effect.* b. Maintain consistency in style and tone.* c. Choose words and phrases to convey ideas precisely.*	**3.** Make effective language choices. a. Expand, combine, and reduce sentences for meaning, reader/listener interest, and style.*

* Conventions standards noted with an asterisk (*) need to be revisited by students in subsequent grades as their writing and speaking grows in sophistication. See chart on page 27 for a complete listing.

Grade 3 students:	Grade 4 students:	Grade 5 students:
Vocabulary Acquisition and Use		
4. Determine word meanings (*based on grade 3 reading*). a. Determine or clarify the meaning of unknown or multiple-meaning words through the use of one or more strategies, such as understanding how the word is used in a sentence; analyzing the word's sounds, spelling, and meaningful parts; and consulting glossaries or beginning dictionaries, both print and digital. b. Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., *company*, *companion*). c. Determine the meaning of the new word formed when a known affix is added to a known word (e.g., *agreeable/disagreeable*, *comfortable/uncomfortable*, *care/careless*, *heat/preheat*). d. Distinguish the literal and nonliteral meanings of words and phrases in context (e.g., *take steps*).	**4.** Determine word meanings (*based on grade 4 reading*). a. Determine or clarify the meaning of unknown or multiple-meaning words through the use of one or more strategies, such as using semantic clues (e.g., definitions, examples, or restatements in text); using syntactic clues (e.g., the word's position or function in the sentence); analyzing the word's sounds, spelling, and meaningful parts; and consulting reference materials, both print and digital. b. Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., *telegraph*, *photograph*, *autograph*). c. Explain the meaning of simple similes and metaphors (e.g., *as pretty as a picture*). d. Paraphrase common idioms, adages, and proverbs.	**4.** Determine word meanings (*based on grade 5 reading*). a. Determine or clarify the meaning of unknown or multiple-meaning words through the use of one or more strategies, such as using semantic clues (e.g., definitions, examples, or restatements in text); using syntactic clues (e.g., the word's position or function in the sentence); analyzing the word's sounds, spelling, and meaningful parts; and consulting reference materials, both print and digital. b. Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., *photograph*, *photosynthesis*). c. Interpret figurative language, including similes and metaphors. d. Explain the meaning of common idioms, adages, and proverbs.
5. Understand word relationships. a. Build real-life connections between words and their use (e.g., describe people who are *friendly* or *helpful*). b. Distinguish among related words that describe states of mind or degrees of certainty (e.g., *knew*, *believed*, *suspected*, *heard*, *wondered*).	**5.** Understand word relationships. a. Build real-life connections between words and their various uses and meanings. b. Define relationships between words (e.g., how *ask* is like and unlike *demand*; what items are likely to be *enormous*). c. Distinguish a word from other words with similar but not identical meanings (synonyms).	**5.** Understand word relationships. a. Build real-life connections between words and their various uses and meanings. b. Define relationships between words (e.g., how *smirk* is like and unlike *smile*; what items are likely to be *vast*). c. Distinguish a word from other words with similar but not identical meanings (synonyms).
6. Use words that are in common, conversational vocabulary as well as grade-appropriate academic vocabulary and domain-specific words (in English language arts, history/social studies, and science) taught directly and acquired through reading and responding to texts.	**6.** Use grade-appropriate general academic vocabulary and domain-specific words and phrases (in English language arts, history/social studies, and science) taught directly and acquired through reading and responding to texts.	**6.** Use grade-appropriate general academic vocabulary and domain-specific words and phrases (in English language arts, history/social studies, and science) taught directly and acquired through reading and responding to texts.

English Language Arts Conventions Progressive Skills, By Standard

The following, marked with an asterisk (*) in the Conventions standards, are skills and understandings that require continued attention in higher grades (after their introduction in the grade listed below) as they are applied to increasingly sophisticated writing and speaking.

Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grades 9–10
1c. Ensure subject-verb and pronoun-antecedent agreement. **3a.** Choose words for effect.						
	1b. Form and use adjectives and adverbs (including comparative and superlative forms), placing them appropriately within sentences. **1c.** Produce complete sentences, avoiding rhetorically poor fragments and run-ons. **1d.** Correctly use frequently confused words (e.g., *effect/affect*, *to/too/two*). **3a.** Use punctuation for effect. **3b.** Maintain consistency in style and tone. **3c.** Choose words and phrases to convey ideas precisely.					
		1b. Recognize and correct inappropriate shifts in verb tense and aspect. **2a.** Use punctuation to separate items in a series. **3a.** Expand, combine, and reduce sentences for meaning, reader/listener interest, and style.				
			1b. Recognize and correct inappropriate shifts in pronoun number and person. **1c.** Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents). **2a.** Use commas, parentheses, or dashes to set off nonrestrictive/parenthetical elements. **3a.** Vary sentence patterns for meaning, reader/listener interest, and style.			
				1c. Place phrases and clauses within a sentence, avoiding misplaced and dangling modifiers. **3b.** Choose words and phrases that express ideas concisely, eliminating wordiness and redundancy.		
					1c. Recognize and correct inappropriate shifts in verb voice and mood.	
						1a. Use parallel structure in writing.

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Reading Standards for Literature 6–12

Following are the standards for grades 6–12, which relate to their College and Career Readiness counterparts by number. They offer a focus for instruction each year and help ensure that students gain adequate exposure to a range of texts and tasks. Rigor is also infused through the requirement that students read increasingly complex texts through the grades.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Key Ideas and Details		
1. Cite specific textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	**1.** Cite several sources of textual evidence when useful to support analysis of what the text says explicitly as well as inferences drawn from the text.	**1.** Cite a wide range of evidence throughout the text when useful to support analysis of what the text says explicitly as well as inferences drawn from the text.
2. Analyze how a theme or central idea develops over the course of a text, drawing on key details.	**2.** Analyze how two or more themes or central ideas in a text relate to one another, drawing on key details.	**2.** Analyze how recurring images or events contribute to the development of a theme or central idea in a text.
3. Describe how a story's plot unfolds (in a series of episodes or as a problem to be solved) as well as how characters adapt or change as they move toward a resolution.	**3.** Analyze how particular lines of dialogue or specific incidents in a story or drama propel the action, reveal aspects of a character, or provoke a decision.	**3.** Analyze how elements of a story or drama interact (e.g., how plot and setting are integral to one another; how the setting affects characters).
Craft and Structure		
4. Interpret the figurative and connotative meanings of words and phrases as they are used in a text.	**4.** Interpret the figurative and connotative meanings of words and phrases as they are used in a text and describe in detail a specific word choice and its impact on meaning and tone.	**4.** Explain the comparisons an author makes through metaphors, allusions, or analogies in a text and analyze how those comparisons contribute to meaning.
5. Explain the effect of such devices as flashbacks and foreshadowing on the development of the plot and meaning of a text.	**5.** Describe how any given sentence, chapter, scene, or stanza fits into the overall structure of a text and contributes to the development of the plot or themes.	**5.** Compare a poem with a conventional structure, such as a sonnet, to a poem without a proscribed structure, such as a free verse poem.
6. Describe how an author establishes the point of view of the speaker or a character in a poem, drama, or story.	**6.** Analyze how an author presents the points of view of different characters in a story or drama, including their different reactions to the same person or event(s).	**6.** Explain how a difference in the perspective or knowledge of characters and the audience (e.g., created through the device of dramatic irony) produces suspense or humor.
Integration of Knowledge and Ideas		
7. Analyze how illustrations, diagrams, multimedia elements, and words contribute to the meaning and tone of a print or digital text (e.g., graphic novel, multimedia presentation of fiction).	**7.** Compare and contrast a text to its filmed, staged, or multimedia version, including examining some techniques unique to each medium (e.g., lighting, sound, color, camera focus and angles).	**7.** Analyze to what degree a filmed or live production of a drama or story stays faithful to or departs from the script or text.
8. (Not applicable to literature)	**8.** (Not applicable to literature)	**8.** (Not applicable to literature)
9. Analyze stories in the same genre (e.g., mysteries, adventure stories), comparing and contrasting their approaches to similar themes and topics.	**9.** Analyze a specific case in which a modern work of fiction draws on patterns of events or character types found in traditional literature (e.g., the hero, the quest).	**9.** Compare a fictional portrayal of a time, place, or character to historical sources from the same period as a means of understanding how authors use or alter history.
Range and Level of Text Complexity		
10. Read literature independently, proficiently, and fluently in the grades 6–8 text complexity band; read texts at the high end of the range with scaffolding as needed.	**10.** Read literature independently, proficiently, and fluently in the grades 6–8 text complexity band; read "stretch" texts in the grades 9–10 text complexity band with scaffolding as needed.	**10.** Read literature independently, proficiently, and fluently in the grades 6–8 text complexity band; engage in sustained practice with "stretch" texts in the grades 9–10 text complexity band with scaffolding as needed.

Grades 9–10 students:	Grades 11–12 students:
Key Ideas and Details	
1. Cite the evidence in the text that most strongly supports a specific analysis of what the text says explicitly as well as inferences drawn from the text.	**1.** Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves things uncertain.
2. Analyze in detail the development and refinement of a theme or central idea in a text, including how it emerges and how it is shaped and refined by specific details.	**2.** Analyze how multiple themes or central ideas in a text interact, build on, and, in some cases, conflict with one another.
3. Analyze how complex characters, including those with conflicting motivations or divided loyalties, develop over the course of a text, interact with other characters, and advance the plot or develop the theme.	**3.** Analyze the impact of the author's choices regarding how to develop and relate elements of a story or drama (e.g., where a story is set, how the action is ordered, how the characters are introduced and developed).
Craft and Structure	
4. Evaluate how an author's use of language, including formality of diction, shapes meaning and tone in a text (e.g., how the language evokes a sense of time and place, how it sets a formal or informal tone).	**4.** Analyze in detail the condensed language of poems (or particularly rich language use in a narrative or drama), determining how specific word choices and multiple meanings shape the impact and tone.
5. Analyze how an author structures a text, orders events within it (e.g., parallel plots), and manipulates time (e.g., pacing) to create mystery, tension, or surprise.	**5.** Analyze how an author's choices concerning how to structure a text (e.g., electing at what point to begin or end a story) shape the meaning of the text.
6. Analyze a case in which the author's work takes a position or stance on a social issue or other topic and describe how the author carries out that purpose.	**6.** Analyze an author's use of satire, sarcasm, irony, understatement, or other means that requires a reader to understand various layers of meaning in a text.
Integration of Knowledge and Ideas	
7. Compare and contrast the representation of a subject or a key scene in two different artistic mediums (e.g., Auden's "Musée de Beaux Arts" and Breughel's *Landscape with the Fall of Icarus*).	**7.** Compare and contrast multiple interpretations of a drama or story (e.g., recorded or live productions), distinguishing how each version interprets the source text. (This includes at least one play by Shakespeare as well as one play by an American dramatist.)
8. (Not applicable to literature)	**8.** (Not applicable to literature)
9. Analyze a wide range of nineteenth- and early-twentieth-century foundational works of American literature, comparing and contrasting approaches to similar ideas or themes in two or more texts from the same period.	**9.** Analyze how an author draws on and transforms fictional source material in a specific work (e.g., how Shakespeare draws on a story from Ovid or how a later author draws on a play by Shakespeare).
Range and Level of Text Complexity	
10. **In grade 9**, read literature independently, proficiently, and fluently in the grades 9–10 text complexity band; read texts at the high end of the range with scaffolding as needed. **In grade 10**, read literature independently, proficiently, and fluently in the grades 9–10 text complexity band; read "stretch" texts in the grades 11–CCR text complexity band with scaffolding as needed.	**10.** **In grade 11**, read literature independently, proficiently, and fluently in the grades 11–CCR text complexity band; read texts at the high end of the range with scaffolding as needed. **In grade 12**, read literature independently, proficiently, and fluently in the grades 11–CCR text complexity band; read "stretch" texts in the Beyond CCR text complexity band with scaffolding as needed.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Key Ideas and Details		
1. Cite specific textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	**1.** Cite several sources of textual evidence when useful to support analysis of what the text says explicitly as well as inferences drawn from the text.	**1.** Cite a wide range of evidence throughout the text when useful to support analysis of what the text says explicitly as well as inferences drawn from the text.
2. Analyze how a central idea develops over the course of a text, drawing on key details.	**2.** Analyze how two or more central ideas in a text relate to one another, drawing on key details.	**2.** Provide an objective summary of a text, accurately conveying an author's view and specific points.
3. Determine the causes or reasons that link different events, ideas, or information in a text, drawing on key details.	**3.** Describe in detail how an author introduces, illustrates, and elaborates a key idea in a text (e.g., through examples or anecdotes).	**3.** Analyze how an author introduces, illustrates, and elaborates two or more significant ideas in a text, including how the relationship between the ideas is expressed.
Craft and Structure		
4. Interpret words and phrases as they are used in a text, including technical, figurative, and connotative meanings, and analyze how an author's choice of specific words in a text contributes to understanding the ideas or concepts.	**4.** Interpret words and phrases as they are used in a text, including technical, figurative, and connotative meanings, and describe in detail how an author's choice of specific words affects meaning and tone.	**4.** Explain the comparisons an author makes through metaphors, allusions, and analogies in a text and analyze how those comparisons contribute to meaning.
5. Describe the structure an author uses to organize a specific text, including how the major sections contribute to the whole.	**5.** Describe how any given sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas.	**5.** Analyze in detail the structure of a specific paragraph in a text, including the role of particular sentences in developing and refining a key concept.
6. Compare and contrast one author's point of view on events with that of another (e.g., a memoir written by and a biography on the same person).	**6.** Describe an author's point of view or purpose in a text and analyze how the author distinguishes his or her point of view from that of others.	**6.** Compare and contrast the points of view and purposes of two authors writing about the same topic.
Integration of Knowledge and Ideas		
7. Compare and contrast the accounts of a subject in different mediums (e.g., a person's life story told in print, video, or multimedia), analyzing which details are emphasized and how the account unfolds in each version.	**7.** Compare and contrast the impression conveyed by a printed text to that conveyed when listening to or viewing a video or multimedia presentation of it (e.g., analyzing how the delivery of a speech affects its impact).	**7.** Evaluate the advantages and disadvantages of using different mediums (e.g., text, video, multimedia) to present a particular topic or idea.
8. Distinguish among fact, opinion, and reasoned judgment presented in a text.	**8.** Identify the stated and unstated premises of an argument and explain how they contribute to the conclusions reached.	**8.** Evaluate an argument's claims and reasoning as well as the degree to which evidence supports each claim.
9. Assess the similarities and differences between two or more texts on the same subject and apply the knowledge gained to inform reading of additional texts.	**9.** Analyze where two or more texts provide conflicting information on the same subject and determine whether the texts disagree on matters of fact or on matters of interpretation.	**9.** Compare and contrast how two or more authors writing about the same topic shape their presentations of key information by emphasizing different evidence or advancing different interpretations of facts.
Range and Level of Text Complexity		
10. Read informational text independently, proficiently, and fluently in the grades 6–8 text complexity band; read texts at the high end of the range with scaffolding as needed.	**10.** Read informational text independently, proficiently, and fluently in the grades 6–8 text complexity band; read "stretch" texts in the grades 9–10 text complexity band with scaffolding as needed.	**10.** Read informational text independently, proficiently, and fluently in the grades 6–8 text complexity band; engage in sustained practice with "stretch" texts in the grades 9–10 text complexity band with scaffolding as needed.

Grades 9–10 students:	Grades 11–12 students:
Key Ideas and Details	
1. Cite evidence in the text that most strongly supports a specific analysis of what the text says explicitly as well as inferences drawn from the text.	**1.** Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves things uncertain.
2. Analyze in detail the development and refinement of a central idea in a text, including how it emerges and is shaped and refined by specific details.	**2.** Analyze how multiple ideas in a text interact, build on, and, in some cases, conflict with one another.
3. Analyze the interactions between and among ideas and events, including how ideas and events influence one another.	**3.** Analyze in detail an author's ideas by describing how the ideas are developed and refined by specific sentences, paragraphs, and larger portions of a text.
Craft and Structure	
4. Evaluate how an author's use of language, including formality and type of diction, shapes meaning and tone in a text (e.g., the formality of a court opinion or a newspaper).	**4.** Interpret how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines *faction* in Federalist No. 10 and No. 51).
5. Evaluate the effectiveness of the structure an author uses in his or her exposition or argument, including whether the structure makes points clear, convincing, and engaging.	**5.** Analyze how an author's choices concerning how to structure a text (e.g., how reasons, evidence, and information are organized and emphasized) shape the meaning of the text.
6. Analyze documents of historical and literary significance, including foundational U.S. documents (e.g., the Declaration of Independence, the Preamble to the Constitution, the Bill of Rights) for their premises, purposes, and structure.	**6.** Analyze how various authors express different points of view on similar events or issues, assessing the authors' assumptions, use of evidence, and reasoning, including analyzing seminal U.S. documents (e.g., *The Federalist*, landmark U.S. Supreme Court majority opinions and dissents).
Integration of Knowledge and Ideas	
7. Synthesize information presented in different formats (e.g., text, video, mutimedia) to generate a coherent understanding of an issue.	**7.** Synthesize and apply multiple sources of information presented in different formats in order to address a question or solve a problem, including resolving conflicting information.
8. Assess the truth of an argument's explicit and implicit premises by determining whether the evidence presented in the text justifies the conclusions.	**8.** Evaluate the reasoning and rhetoric that support an argument or explanation, including assessing the relevance and sufficiency of evidence and identifying false statements or fallacious reasoning.
9. Analyze how authors argue with or otherwise respond to one another's ideas or accounts of key events, evaluating the strength of each author's interpretation.	**9.** Synthesize explanations and arguments from diverse sources to provide a coherent account of events or ideas, including resolving conflicting information.
Range and Level of Text Complexity	
10. **In grade 9**, read informational text independently, proficiently, and fluently in the grades 9–10 text complexity band; read texts at the high end of the range with scaffolding as needed. **In grade 10**, read informational text independently, proficiently, and fluently in the grades 9–10 text complexity band; read "stretch" texts in the grades 11–CCR text complexity band with scaffolding as needed.	**10.** **In grade 11**, read informational text independently, proficiently, and fluently in the grades 11–CCR text complexity band; read texts at the high end of the range with scaffolding as needed. **In grade 12**, read informational text independently, proficiently, and fluently in the grades 11–CCR text complexity band; read "stretch" texts in the Beyond CCR text complexity band with scaffolding as needed.

Writing Standards 6–12

Following are the standards for grades 6–12, which relate to their College and Career Readiness counterparts by number. They offer a focus for instruction in each year to help ensure that students gain adequate exposure to a range of skills and applications. Growth in writing ability is characterized by an increasing sophistication in all aspects of language use, from vocabulary and syntax to the development and organization of ideas. At the same time, the content and sources that students address in their writing grow in demand every year.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Text Types and Purposes		
1. Write arguments in which they: a. Introduce a claim about a topic or issue and organize the reasons and evidence to support the claim. b. Support the claim with clear reasons and relevant evidence. c. Use words, phrases, and clauses to convey the relationships among claims and reasons. d. Sustain an objective style and tone. e. Provide a concluding statement or section that follows from the argument.	**1.** Write arguments in which they: a. Introduce a claim about a topic or issue, acknowledge alternate or opposing claims, and organize the reasons and evidence logically to support the claim. b. Support the claim with logical reasoning and detailed, relevant evidence that demonstrate a comprehensive understanding of the topic. c. Use words, phrases, and clauses to convey the relationships among the claims, reasons, and evidence. d. Sustain an objective style and tone. e. Provide a concluding statement or section that follows logically from the argument.	**1.** Write arguments in which they: a. Introduce a claim about a topic or issue, distinguish it from alternate or opposing claims, and organize the reasons and evidence logically to support the claim. b. Support the claim with logical reasoning and detailed and relevant evidence from credible sources to demonstrate a comprehensive understanding of the topic. c. Use words, phrases, and clauses to make clear the relationships among claims, reasons, counterclaims, and evidence. d. Sustain an objective style and tone. e. Provide a concluding statement or section that follows logically from the argument.
2. Write informative/explanatory texts in which they: a. Introduce a topic and organize information appropriate to the purpose, using strategies such as definition, classification, comparison/contrast, and cause/effect. b. Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate links and varied sentence structures to join and clarify ideas. d. Use straightforward language to create an objective style appropriate for a reader seeking information. e. Provide a conclusion that follows logically from the information or explanation presented.	**2.** Write informative/explanatory texts in which they: a. Introduce and establish a topic that provides a sense of what is to follow and organize information appropriate to the purpose, using strategies such as definition, classification, comparison/contrast, and cause/effect. b. Develop the topic with relevant and accurate facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate links and varied sentence structures to create cohesion and clarify ideas. d. Use precise language and sustain an objective style appropriate for a reader seeking information. e. Provide a conclusion that follows logically from the information or explanation presented.	**2.** Write informative/explanatory texts in which they: a. Introduce and establish a topic and organize information under broader concepts or categories. b. Develop the topic with well-chosen, relevant, and accurate facts, concrete details, quotations, or other information and examples. c. Use varied links and sentence structures to create cohesion and clarify information and ideas. d. Use precise language and domain-specific and technical wording (when appropriate) and sustain a formal, objective style appropriate for a reader seeking information. e. Provide a conclusion that follows logically from the information or explanation presented.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Text Types and Purposes (continued)		
3. Write narratives in which they: a. Engage and orient the reader by establishing a context and point of view, and organize a sequence of events or experiences. b. Develop narrative elements (e.g., setting, event sequence, characters) using relevant sensory details. c. Use a variety of transition words, phrases, and clauses to convey sequence, shift from one time frame or setting to another, and/or show the relationships among events and experiences. d. Choose words and phrases to develop the events, experiences, and ideas precisely. e. Provide a satisfying conclusion that follows from the events, experiences, or ideas.	**3.** Write narratives in which they: a. Engage and orient the reader by establishing a context and point of view, and purposefully organize a sequence of events or experiences. b. Develop narrative elements (e.g., setting, conflict, complex characters) with relevant and specific sensory details. c. Use a variety of techniques to convey sequence, shift from one time frame or setting to another, and/or show the relationships among events or experiences. d. Choose words and phrases to develop the events, experiences, and ideas precisely and to create mood. e. Provide a satisfying conclusion that follows from the events, experiences, or ideas.	**3.** Write narratives in which they: a. Engage and orient the reader by establishing a context and point of view, and purposefully organize a progression of events or experiences. b. Develop narrative elements (e.g., setting, plot, event sequence, complex characters) with well-chosen, relevant, and specific sensory details. c. Use a variety of techniques to convey sequence in multiple storylines, shift from one time frame or setting to another, and/or show the relationships among events or experiences. d. Choose words and phrases to effectively develop the events, experiences, and ideas precisely and to create mood. e. Provide a satisfying conclusion that follows from the events, experiences, or ideas.
Production and Distribution of Writing		
4. Produce writing in which the organization, development, substance, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in Standards 1–3 above.)	**4.** Produce writing in which the organization, development, substance, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in Standards 1–3 above.)	**4.** Produce writing in which the organization, development, substance, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in Standards 1–3 above.)
5. With some guidance and support from peers and adults, strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.	**5.** With some guidance and support from peers and adults, strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach after rethinking how well questions of purpose have been addressed.	**5.** With some guidance and support from peers and adults, strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach after rethinking how well questions of purpose and context have been addressed.
6. Use technology, including the Internet, to produce, publish, and interact with others about writing, including linking to and citing online sources.	**6.** Use technology, including the Internet, to produce, publish, and interact with others about writing, including presenting and citing information in a digital format.	**6.** Use technology, including the Internet, to present and cite information effectively in a digital format, including when publishing and responding to writing.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Research to Build Knowledge		
7. Perform short, focused research projects in response to a question and refocus the inquiry in response to further research and investigation.	**7.** Perform short, focused research projects in response to a question and generate additional related and focused questions for further research and investigation.	**7.** Perform short, focused research projects in response to a question and generate additional related questions that allow for multiple avenues of exploration.
8. Gather relevant information from multiple print and digital sources, assess the credibility of each source, and quote or paraphrase the data and conclusions of others while avoiding plagiarism and documenting sources.	**8.** Gather relevant information from multiple print and digital sources using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others, avoiding plagiarism and following a standard format for citation.	**8.** Gather relevant information from multiple print and digital sources using advanced search features; assess the credibility and accuracy of each source; and quote or paraphrase the evidence, avoiding plagiarism and following a standard format for citation.
9. Write in response to literary or informational sources, drawing evidence from the text to support analysis and reflection as well as to describe what they have learned. a. Apply *grade 6 reading standards* to literature (e.g., "Analyze stories in the same genre (e.g., mysteries, adventure stories), comparing and contrasting their approaches to similar themes and topics."). b. Apply *grade 6 reading standards* to literary nonfiction (e.g., "Distinguish among fact, opinion, and reasoned judgment presented in a text").	**9.** Write in response to literary or informational sources, drawing evidence from the text to support analysis and reflection as well as to describe what they have learned. a. Apply *grade 7 reading standards* to literature (e.g., "Analyze a specific case in which a modern work of fiction draws on patterns of events or character types found in traditional literature (e.g., the hero, the quest). b. Apply *grade 7 reading standards* to literary nonfiction (e.g., "Identify the stated and unstated premises of an argument and explain how they contribute to the conclusions reached").	**9.** Write in response to literary or informational sources, drawing evidence from the text to support analysis and reflection as well as to describe what they have learned: a. Apply *grade 8 reading standards* to literature (e.g., "Compare a fictional portrayal of a time, place, or character to historical sources from the same period as a means of understanding how authors use or alter history"). b. Apply *grade 8 reading standards* to literary nonfiction (e.g., "Evaluate an argument's claims and reasoning as well as the degree to which evidence supports each claim").
Range of Writing		
10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.	**10.** Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.	**10.** Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

Grades 9–10 students:	Grades 11–12 students:
Text Types and Purposes	
1. Write arguments which they: a. Introduce a precise claim, distinguish it from alternate or opposing claims, and provide an organization that establishes clear relationships among the claim, reasons, and evidence. b. Develop a claim and counterclaim fairly, supplying evidence for each, while pointing out the strengths of their own claim and the weaknesses of the counterclaim. c. Use precise words, phrases, and clauses to make clear the relationships between claims and reasons, between reasons and evidence, and between claims and counterclaims. d. Sustain an objective style and tone while attending to the norms and conventions of the specific discipline as well as to the audience's knowledge of the issue. e. Provide a concluding statement or section that follows logically from the argument and offers a reflection or recommendation.	**1.** Write arguments in which they: a. Introduce a substantive claim, establish its significance, distinguish it from alternate or opposing claims, and create an organization so that claims, reasons, and evidence are purposefully and logically sequenced. b. Develop a claim and counterclaim thoroughly and fairly, supplying the most relevant evidence, while pointing out the strengths of their own claim and the weaknesses of the counterclaim. c. Use precise words, phrases, and complex syntax to make explicit the relationships between claims and reasons, between reasons and evidence, and between claims and counterclaims. d. Sustain an objective style and tone while attending to the norms and conventions of the specific discipline as well as to the audience's knowledge, values, and possible biases. e. Provide a concluding statement or section that follows logically from the argument and offers a reflection or recommendation.
2. Write informative/explanatory texts in which they: a. Introduce a topic and organize information under broader concepts and categories to make clear the connections and distinctions between key ideas appropriate to the purpose; include formatting (e.g., headings) and graphics (e.g., figures, tables) when useful to clarify ideas. b. Develop a complex topic through well-chosen, relevant, and sufficient facts, concrete details, quotations, extended definitions, or other information and examples. c. Use varied transitions and sentence structures to create cohesion, clarify information and ideas, and link major sections in the text. d. Use precise language and domain-specific and technical wording (when appropriate) to manage the complexity of the topic in a style that responds to the specific discipline and context as well as to the expertise of likely readers. e. Provide a conclusion that follows logically from the information or explanation provided and articulates the implications or significance of the topic.	**2.** Write informative/explanatory texts in which they: a. Introduce a complex topic and organize the information at multiple levels of the text so that each new piece of information builds on that which precedes it to create a unified whole; include formatting (e.g., headings) and graphics (e.g., figures, tables) when useful to clarify ideas. b. Thoroughly develop aspects of a complex topic through the purposeful selection of the most significant and relevant facts, concrete details, quotations, extended definitions, or other information and examples. c. Use varied transitional devices and sentence structures to create cohesion, clarify complex ideas, and link the major sections of the text. d. Use precise language, domain-specific and technical wording (when appropriate), and techniques such as metaphor, simile, and analogy to manage the complexity of the topic in a style that responds to the specific discipline and context as well as to the expertise of likely readers. e. Provide a well-developed conclusion that follows logically from the information or explanation provided and articulates the implications or significance of the topic.

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Grades 9–10 students:	Grades 11–12 students:
Text Types and Purposes (continued)	
3. Write narratives in which they: a. Engage the reader by establishing a problem, situation, or observation and purposefully organize a progression of events or experiences. b. Develop narrative elements (e.g., setting, event sequence, complex characters) with well-chosen, revealing details. c. Use a variety of techniques to sequence events so that they build on one another to create a coherent whole. d. Use precise language to develop a picture of how the events, experiences, and ideas emerge and unfold. e. Provide a satisfying conclusion that follows from what is experienced, observed, or resolved over the course of the narrative.	**3.** Write narratives in which they: a. Engage the reader by establishing the significance of a problem, situation, or observation and purposefully organize events or experiences. b. Develop narrative elements (e.g., setting, stance, event sequence, complex characters) with purposefully selected details that call readers' attention to what is most distinctive or worth noticing. c. Use a variety of techniques to build toward a particular impact (e.g., a sense of mystery, suspense, growth, or resolution). d. Use precise language to develop the events, experiences, and ideas clearly and to reinforce the style. e. Provide a satisfying conclusion that follows from what is experienced, observed, or resolved over the course of the narrative.
Production and Distribution of Writing	
4. Produce writing in which the organization, development, substance, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for this standard are defined in Standards 1–3 above.)	**4.** Produce writing in which the organization, development, substance, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for this standard are defined in Standards 1–3 above.)
5. Strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific task and context.	**5.** Strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
6. Use technology, including the Internet, to produce, publish, and collaborate on a shared writing product, incorporating diverse and sometimes conflicting feedback.	**6.** Demonstrate command of technology, including the Internet, to produce, publish, and update work in response to ongoing feedback, including fresh arguments or new information.
Research to Build Knowledge	
7. Perform short, focused research projects and more sustained research; synthesize multiple sources on a subject to answer a question or solve a problem.	**7.** Perform short, focused research projects and more sustained research; synthesize multiple authoritative sources on a subject to answer a question or solve a problem.
8. Assemble evidence gathered from authoritative print and digital sources; assess the credibility and accuracy of the information and its strengths and limitations in terms of answering the research question; and integrate selected information into the text, avoiding overreliance on any one source and following a standard format for citation.	**8.** Analyze evidence gathered from multiple authoritative print and digital sources; assess the credibility and accuracy of the information and its usefulness and relevance for the specific task, purpose, and audience; and integrate selected information into the text, following a standard format for citation.

Grades 9–10 students:	Grades 11–12 students:
Research to Build Knowledge (continued)	
9. Write in response to literary or informational sources, drawing evidence from the text to support analysis and reflection as well as to describe what they have learned. a. Apply *grades 9–10 reading standards* to literature (e.g., "Analyze a wide range of nineteenth- and early-twentieth-century foundational works of American literature, comparing and contrasting approaches to similar ideas or themes in two or more texts from the same period."). b. Apply *grades 9–10 reading standards* to literary nonfiction (e.g., "Assess the truth of an argument's explicit and implicit premises by determining whether the evidence presented in the text justifies the conclusions").	**9.** Write in response to literary or informational sources, drawing evidence from the text to support analysis and reflection as well as to describe what they have learned. a. Apply *grades 11–12 reading standards* to literature (e.g., "Analyze how an author draws on and transforms fictional source material, such as how Shakespeare draws on a story from Ovid, or a later author draws on Shakespeare"). b. Apply *grades 11–12 reading standards* to literary nonfiction (e.g., "Evaluate the reasoning and rhetoric that support an argument or explanation, including assessing the relevance and sufficiency of evidence and identifying false statements or fallacious reasoning").
Range of Writing	
10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.	**10.** Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

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Speaking and Listening Standards 6–12

Following are the standards for grades 6–12, which relate to their College and Career Readiness counterparts by number. They offer a focus for instruction in each year to help ensure that students gain adequate exposure to a range of skills and applications.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Comprehension and Collaboration		
1. Initiate and engage actively in group discussions on *grade 6 topics, texts, and issues* being studied in class. a. Prepare for discussions by completing reading or conducting research and explicitly draw on that material in discussions. b. Cooperate with peers to set clear goals and deadlines. c. Build on the ideas of others by asking relevant questions and contributing appropriate and essential information. d. Review the key ideas expressed and extend their own thinking in light of new information learned.	**1.** Initiate and engage actively in group discussions on *grade 7 topics, texts, and issues* being studied in class. a. Prepare for discussions by completing reading or conducting research and explicitly draw on that material in discussions. b. Cooperate with peers to set clear goals and deadlines. c. Advance a discussion by asking questions, responding precisely, and sharing factual knowledge and observations. d. Ensure a hearing for the range of positions on an issue. e. Take the views of others into account and, when warranted, modify their own views in light of the evidence presented.	**1.** Initiate and engage actively in group discussions on *grade 8 topics, texts, and issues* being studied in class. a. Prepare for discussions by completing reading or conducting research and explicitly draw on that material in discussions. b. Cooperate with peers to set clear goals and deadlines. c. Advance a discussion by asking questions, responding precisely, and sharing factual knowledge and observations supported by credible evidence. d. Ensure a hearing for the range of positions on an issue. e. Qualify or justify, when warranted, their own thinking after listening to others' questions or accounts of the evidence.
2. Interpret information presented in visual or multimodal formats and explain how the information clarifies and contributes to a topic or issue under study.	**2.** Determine the main ideas and supporting elements presented in oral, visual, or multimodal formats and explain how the information clarifies and contributes to an understanding of a topic or issue under study.	**2.** Determine the purpose of and perspectives represented in oral, visual, or multimodal formats and evaluate whether the information is laden with social, commercial, or political motives.
3. Delineate the claims made by a speaker or presenter and detail what evidence supports which claims.	**3.** Evaluate a speaker's or presenter's reasoning and claims as well as the degree to which each claim is logically supported by the evidence provided.	**3.** Assess the truth of a speaker's or presenter's premises and the validity of his or her conclusions.
Presentation of Knowledge and Ideas		
4. Present information, emphasizing salient points with pertinent descriptions and details and using appropriate eye contact, adequate volume, and clear pronunciation.	**4.** Present claims and findings with relevant and specific descriptions, facts, and examples, and use appropriate eye contact, adequate volume, and clear pronunciation.	**4.** Present claims and findings with relevant evidence that is accessible and verifiable to listeners, and use appropriate eye contact, adequate volume, and clear pronunciation.
5. Incorporate digital media and visual displays of data when helpful and in a manner that strengthens the presentation.	**5.** Incorporate digital media and visual displays of data when helpful and in a manner that strengthens the presentation.	**5.** Incorporate digital media and visual displays of data when helpful and in a manner that strengthens the presentation.
6. Adapt speech to a variety of contexts and communicative tasks, demonstrating a command of formal English when indicated or appropriate. (See "Conventions" in Language, on pages 47–50, for specific demands.)	**6.** Adapt speech to a variety of contexts and communicative tasks, demonstrating a command of formal English when indicated or appropriate. (See "Conventions" in Language, pages 47–50, for specific demands.)	**6.** Adapt speech to a variety of contexts and communicative tasks, demonstrating a command of formal English when indicated or appropriate. (See "Conventions" in Language, pages 47–50, for specific demands.)

Grades 9–10 students:	Grades 11–12 students:
Comprehension and Collaboration	
1. Initiate and participate effectively in group discussions on *grades 9–10 topics, texts, and issues* being studied in class. a. Prepare for discussions by reading and researching material under study and explicitly draw on that preparation in discussions. b. Cooperate with peers to set clear goals and deadlines and to establish roles. c. Build on essential information from others' input by asking questions and sharing comments that enrich discussions. d. Acknowledge the ideas and contributions of others in the group, reach decisions about the information and ideas under discussion, and complete the task. e. Evaluate whether the team has met its goals.	**1.** Initiate and participate effectively in group discussions on *grades 11–12 topics, texts, and issues* being studied in class. a. Prepare for discussions by distilling the evidence or information about the material under study and explicitly draw on that preparation in discussions. b. Cooperate with peers to set clear goals and deadlines, establish roles, and determine ground rules for decision making (e.g., informal consensus, taking votes on key issues, presentation of alternate views). c. Propel conversations forward by asking questions that test the evidence and by sharing findings that clarify, verify, or challenge ideas and conclusions. d. Summarize accurately the comments and claims made on all sides of an issue and determine what additional information, research, and tasks are required for the team to complete the task. e. Evaluate whether the team has met its goals.
2. Synthesize information presented visually or multimodally with other information presented orally, noting any discrepancies between the data that emerge as a result.	**2.** Integrate multiple streams of data presented through various mediums, evaluating the reliability and credibility of each source of information in order to answer questions, solve problems, or build knowledge.
3. Determine a speaker's or presenter's position or point of view by assessing the evidence, word choice, points of emphasis, and tone used.	**3.** Evaluate the information conveyed and rhetoric used by a speaker or presenter, identifying logical errors in reasoning and exaggerated or distorted evidence.
Presentation of Knowledge and Ideas	
4. Plan and deliver relevant and sufficient evidence in support of findings and claims such that listeners can follow the reasoning, adjusting presentation to particular audiences and purposes.	**4.** Plan and deliver focused and coherent presentations that convey clear and distinct perspectives such that the line of reasoning and sources of support are clear and alternative perspectives are addressed, adjusting presentation to particular audiences and purposes.
5. Make strategic use of digital media elements and visual displays of data to enhance understanding.	**5.** Make strategic use of digital media elements and visual displays of data to enhance understanding.
6. Adapt speech to a variety of contexts and communicative tasks, demonstrating a command of formal English when indicated or appropriate. (See "Conventions" in Language, pages 47–50, for specific demands.)	**6.** Adapt speech to a variety of contexts and communicative tasks, demonstrating a command of formal English when indicated or appropriate. (See "Conventions" in Language, pages 47–50, for specific demands.)

Language Standards 6–12

Following are the standards for grades 6–12, which relate to their College and Career Readiness counterparts by number. They offer a focus for instruction in each year to help ensure that students gain adequate exposure to a range of skills and applications.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Conventions in Writing and Speaking		
1. Observe conventions of grammar and usage. a. Ensure that pronouns are in the proper case (subjective, objective, possessive). b. Recognize and correct inappropriate shifts in pronoun number and person.* c. Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).*	**1.** Observe conventions of grammar and usage. a. Explain the function of phrases and clauses in general and their functions in specific sentences. b. Chose among simple, compound, complex, and compound-complex sentences to signal differing relationships among ideas. c. Place phrases and clauses within a sentence, avoiding misplaced and dangling modifiers.*	**1.** Observe conventions of grammar and usage. a. Form and use verbs in the active and passive voice. b. Form and use verbs in the indicative, imperative, interrogative, conditional, and subjunctive moods. c. Recognize and correct inappropriate shifts in verb voice and mood.*
2. Observe conventions of capitalization, punctuation, and spelling. a. Use commas, parentheses, or dashes to set off nonrestrictive/parenthetical elements.* b. Spell correctly.	**2.** Observe conventions of capitalization, punctuation, and spelling. a. Use a comma before a coordinating conjunction in a compound sentence. b. Spell correctly.	**2.** Observe conventions of capitalization, punctuation, and spelling. a. Use a comma to separate coordinate adjectives (e.g., *It was a fascinating, enjoyable movie* but not *He wore an old[,] green shirt*). b. Use a comma, ellipses, or dash to indicate a pause or break. c. Spell correctly.
3. Make effective language choices. a. Vary sentence patterns for meaning, reader/listener interest, and style.*	**3.** Make effective language choices. a. Choose words and phrases that express ideas concisely, eliminating wordiness and redundancy.*	**3.** Make effective language choices. a. Use verbs in the active and passive voice and in the conditional and subjunctive moods to achieve particular effects (e.g., emphasizing the actor or the action; expressing uncertainty or describing a state contrary to fact).

* Conventions standards noted with an asterisk need to be revisited by students in subsequent grades. See page 51 for a complete listing.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Vocabulary Acquisition and Use		
4. Determine word meanings (*based on grade 6 reading*). a. Determine or clarify the meaning of unknown or multiple-meaning words through the use of one or more strategies, such as using semantic clues (e.g., sentence and paragraph context, the organizational pattern of the text); using syntactic clues (e.g., the word's position or function in the sentence); analyzing the word's sounds, spelling, and meaningful parts; and consulting reference materials, both print and digital. b. Use a known root as a clue to the meaning of an unknown word (e.g., *audience*, *auditory*, *audible*). c. Verify the preliminary determination of a word's meaning (e.g., by checking the inferred meaning in context or looking up the word in a dictionary). d. Interpret various figures of speech (e.g., personification) relevant to particular texts.	**4.** Determine word meanings (*based on grade 7 reading*). a. Determine or clarify the meaning of unknown or multiple-meaning words through the use of one or more strategies, such as using semantic clues (e.g., sentence and paragraph context, the organizational pattern of the text); using syntactic clues (e.g., the word's position or function in the sentence); analyzing the word's sounds, spelling, and meaningful parts; and consulting reference materials, both print and digital. b. Use a known root as a clue to the meaning of an unknown word (e.g., *belligerent*, *bellicose*, *rebel*). c. Verify the preliminary determination of a word's meaning (e.g., by checking the inferred meaning in context or looking up the word in a dictionary). d. Interpret various figures of speech (e.g., allegory) relevant to particular texts.	**4.** Determine word meanings (*based on grade 8 reading*). a. Determine or clarify the meaning of unknown or multiple-meaning words through the use of one or more strategies, such as using semantic clues (e.g., sentence and paragraph context, the organizational pattern of the text); using syntactic clues (e.g., the word's position or function in the sentence); analyzing the word's sounds, spelling, and meaningful parts; and consulting reference materials, both print and digital. b. Use a known root as a clue to the meaning of an unknown word (e.g., *precede*, *recede*, *secede*). c. Verify the preliminary determination of a word's meaning (e.g., by checking the inferred meaning in context or looking up the word in a dictionary). d. Interpret various figures of speech (e.g. verbal irony, puns) relevant to particular texts.
5. Understand word relationships. a. Trace the network of uses and meanings that different words have and the interrelationships among those meanings and uses. b. Distinguish a word from other words with similar denotations but different connotations.	**5.** Understand word relationships. a. Trace the network of uses and meanings different words have and the interrelationships among those meanings and uses. b. Distinguish a word from other words with similar denotations but different connotations.	**5.** Understand word relationships. a. Trace the network of uses and meanings different words have and the interrelationships among those meanings and uses. b. Distinguish a word from other words with similar denotations but different connotations.
6. Use grade-appropriate general academic vocabulary and English language arts–specific words and phrases taught directly and gained through reading and responding to texts.	**6.** Use grade-appropriate general academic vocabulary and English language arts–specific words and phrases taught directly and gained through reading and responding to texts.	**6.** Use grade-appropriate general academic vocabulary and English language arts–specific words and phrases taught directly and gained through reading and responding to texts.

Grades 9–10 students:	Grades 11–12 students:
Conventions in Writing and Speaking	
1. Observe conventions of grammar and usage. a. Use parallel structure in writing.* b. Use various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, absolute) and clauses (independent, dependent; noun, relative, adverbial) to add variety and interest to writing or presentations.	**1.** Observe conventions of grammar and usage. a. Apply the understanding that usage is a matter of convention, can change over time, and is sometimes contested. b. Resolve complex usage issues, particularly when the issue involves contested or changing usage; consult references (e.g., *Merriam-Webster's Dictionary of English Usage*) as needed for guidance.
2. Observe conventions of capitalization, punctuation, and spelling. a. Use a semicolon (and perhaps a conjunctive adverb) to link two or more closely related independent clauses. b. Use a colon to introduce a list or quotation. c. Spell correctly.	**2.** Observe conventions of capitalization, punctuation, and spelling. a. Observe the conventions concerning using hyphens to join words. b. Spell correctly.
3. Make effective language choices. a. Write and edit work so that it conforms to the guidelines in a style manual.	**3.** Make effective language choices. a. Write and edit work so that it conforms to the guidelines in a style manual.
Vocabulary Acquisition and Use	
4. Determine word meanings (*based on grades 9–10 reading*). a. Determine or clarify the meaning of unknown or multiple-meaning words through the use of one or more strategies, such as using semantic clues (e.g., sentence, paragraph, and whole-text context; the organizational pattern of the text); using syntactic clues (e.g., the word's position or function in the sentence); analyzing the word's sounds, spelling, and meaningful parts; understanding the word's etymology; and consulting reference materials, both print and digital. b. Verify the preliminary determination of a word's meaning (e.g., by checking the inferred meaning in context or looking up the word in a dictionary). c. Interpret various figures of speech (e.g., hyperbole, paradox) and analyze their role in a text.	**4.** Determine word meanings (*based on grades 11–12 reading*). a. Determine or clarify the meaning of unknown or multiple-meaning words through the use of one or more strategies, such as using semantic clues (e.g., sentence, paragraph, and whole-text context; the organizational pattern of the text); using syntactic clues (e.g., the word's position or function in the sentence); analyzing the word's sounds, spelling, and meaningful parts; understanding the word's etymology; and consulting reference materials, both print and digital. b. Verify the preliminary determination of a word's meaning (e.g., by checking the inferred meaning in context or looking up the word in a dictionary). c. Interpret various figures of speech (e.g., satire, sarcasm) and analyze their role in a text.
5. Understand word relationships. a. Trace the network of uses and meanings different words have and the interrelationships among those meanings and uses. b. Distinguish a word from other words with similar denotations but different connotations.	**5.** Understand word relationships. a. Trace the network of uses and meanings different words have and the interrelationships among those meanings and uses. b. Distinguish a word from other words with similar denotations but different connotations.
6. Use grade-appropriate general academic vocabulary and English language arts–specific words and phrases taught directly and gained through reading and responding to texts.	**6.** Use grade-appropriate general academic vocabulary and English language arts–specific words and phrases taught directly and gained through reading and responding to texts.

* Conventions standards noted with an asterisk need to be revisited by students in subsequent grades as their writing and speak grow in sophistication. See page 51 for a complete listing.

English Language Arts Conventions Progressive Skills, By Standard

The following, marked with an asterisk (*) in the Conventions standards, are skills and understandings that require continued attention in higher grades (after their introduction in the grade listed below) as they are applied to increasingly sophisticated writing and speaking.

Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grades 9–10
1c. Ensure subject-verb and pronoun-antecedent agreement. **3a.** Choose words for effect.						
	1b. Form and use adjectives and adverbs (including comparative and superlative forms), placing them appropriately within sentences. **1c.** Produce complete sentences, avoiding rhetorically poor fragments and run-ons. **1d.** Correctly use frequently confused words (e.g., *effect/affect*, *to/too/two*). **3a.** Use punctuation for effect. **3b.** Maintain consistency in style and tone. **3c.** Choose words and phrases to convey ideas precisely.					
		1b. Recognize and correct inappropriate shifts in verb tense and aspect. **2a.** Use punctuation to separate items in a series. **3a.** Expand, combine, and reduce sentences for meaning, reader/listener interest, and style.				
			1b. Recognize and correct inappropriate shifts in pronoun number and person. **1c.** Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents). **2a.** Use commas, parentheses, or dashes to set off nonrestrictive/parenthetical elements. **3a.** Vary sentence patterns for meaning, reader/listener interest, and style.			
				1c. Place phrases and clauses within a sentence, avoiding misplaced and dangling modifiers. **3b.** Choose words and phrases that express ideas concisely, eliminating wordiness and redundancy.		
					1c. Recognize and correct inappropriate shifts in verb voice and mood.	
						1a. Use parallel structure in writing.

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Reading Standards for History/Social Studies 6–12

Following are the standards for grades 6–12, which relate to their College and Career Readiness counterparts by number. The standards below begin at grade 6; standards for K–5 reading in history/social studies are integrated into the K–5 standards for reading informational text.

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Key Ideas and Details		
1. Cite specific textual evidence to support analysis of primary and secondary sources.	**1.** Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.	**1.** Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.
2. Determine the main ideas or information of a primary or secondary source; summarize the source, basing the summary on information in the text rather than on prior knowledge or opinions.	**2.** Determine the main ideas or information of a primary or secondary source; summarize how key events or ideas develop over the course of the text.	**2.** Determine the main ideas or information of a primary or secondary source; provide a summary that makes clear the relationships between the key details and ideas.
3. Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).	**3.** Analyze in detail a series of events described in a text and the causes that link the events; distinguish whether earlier events caused later ones or simply preceded them.	**3.** Analyze how ideas and beliefs emerge, develop, and influence events, based on evidence in the text .
Craft and Structure		
4. Determine the meaning of words and phrases in a text, including vocabulary specific to domains related to history/social studies.	**4.** Determine the meaning of words and phrases in a text, including the vocabulary describing political, economic, or social aspects of history.	**4.** Interpret the meaning of words and phrases in a text, including how an author uses and refines the meaning of a key term over the course of a text (e.g., how Madison defines *faction* in Federalist No. 10 and No. 51).
5. Identify how a history/social studies text presents information (e.g., sequentially, comparatively, causally).	**5.** Explain how an author chooses to structure information or an explanation in a text to emphasize key points or advance a point of view.	**5.** Analyze in detail how a complex primary source is structured, including how key sentences, paragraphs, and larger portions of the text contribute to the whole.
6. Identify aspects of a text that reveal an author's point of view or purpose (e.g., loaded language, inclusion or avoidance of particular facts).	**6.** Compare the point of view of two or more authors by comparing how they treat the same or similar historical topics, including which details they include and emphasize in their respective accounts.	**6.** Evaluate authors' differing points of view on the same historical event or issue by assessing the authors' claims, evidence, and reasoning.
Integration of Knowledge and Ideas		
7. Integrate graphical information (e.g., pictures, videos, maps, time lines) with other information in a print or digital text.	**7.** Integrate quantitative or technical information presented in maps, time lines, and videos with other information in a print or digital text.	**7.** Synthesize ideas and data presented graphically and determine their relationship to the rest of a print or digital text, noting discrepancies between the graphics and other information in the text.
8. Distinguish among fact, opinion, and reasoned judgment in a historical account.	**8.** Assess the extent to which the evidence n a text supports the author's claims.	**8.** Evaluate an author's premises, claims, and evidence by corroborating or challenging them with other sources of information.
9. Analyze the relationship between a primary and secondary source on the same topic.	**9.** Compare and contrast treatments of the same topic in several primary and secondary sources.	**9.** Integrate information from diverse sources, both primary and secondary, into a coherent understanding of an idea or event, noting discrepancies among sources.
Range and Level of Text Complexity		
10. Read informational text independently, proficiently, and fluently in the grades 6–8 text complexity band; read "stretch" texts with scaffolding as needed.	**10.** Read informational text independently, proficiently, and fluently in the grades 9–10 text complexity band; read "stretch" texts with scaffolding as needed.	**10.** Read informational text independently, proficiently, and fluently in the grades 11–12 text complexity band; read "stretch" texts with scaffolding as needed.

Reading Standards for Science 6–12

Following are the standards for grades 6–12, which relate to their College and Career Readiness counterparts by number. The standards below begin at grade 6; standards for K–5 reading in science are integrated into the K–5 standards for reading informational text.

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Key Ideas and Details		
1. Cite specific textual evidence to support analysis of scientific and technical texts.	**1.** Cite specific textual evidence to support analysis of scientific and technical text, including analysis of the precise details of explanations or descriptions.	**1.** Cite specific textual evidence to support analysis of scientific and technical texts, including analysis of important distinctions the author makes between ideas or pieces of information.
2. Summarize the broad ideas and specific conclusions made in a text, basing the summary on textual information rather than on prior knowledge or opinions.	**2.** Analyze the development of a text's explanation of a process or phenomenon, summarizing the central ideas and supporting details.	**2.** Summarize complex information or ideas presented in a text, paraphrasing it in simpler but still accurate terms.
3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	**3.** Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	**3.** Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the causes of the specific results based on information from the text.
Craft and Structure		
4. Determine the meaning of key terms, symbols, and domain-specific vocabulary used in a text.	**4.** Determine the meaning of key terms, symbols, and domain-specific vocabulary used in a text, noting relationships among terms pertaining to important ideas or processes (e.g., *force*, *friction*, *reaction force*, *energy*).	**4.** Determine the meaning of key terms, symbols, and domain-specific vocabulary used in a text, attending to the precise meaning of terms as they are used in particular scientific or technical contexts.
5. Analyze how each major part of a text contributes to an understanding of the topic discussed in the text.	**5.** Analyze the relationships among concepts in a text, including developing propositional concept maps to organize and illustrate the ideas.	**5.** Analyze the hierarchical or categorical relationships of concepts or information presented in a text.
6. Analyze the purpose of an experiment or explanation in a text, including defining the problem or question to be resolved.	**6.** Analyze the purpose of an experiment, including defining the possibilities ruled out by the experimental results.	**6.** Analyze the scope and purpose of an experiment or explanation and determine which related issues remain unresolved or uncertain.
Integration of Knowledge and Ideas		
7. Integrate information provided by the words in a text with a version of that information expressed graphically (e.g., in a flowchart, diagram, model, graph, or table).	**7.** Integrate quantitative or technical information presented graphically (e.g., in a flowchart, diagram, model, graph, or table) with other information in a text.	**7.** Synthesize information in different formats by representing complex information in a text in graphical form (e.g., a table or chart) or translating a graphic or equation into words.
8. Distinguish facts or reasoned judgments based on research findings from opinions.	**8.** Assess the extent to which the evidence in a text supports a scientific claim or a recommendation for solving a technical problem.	**8.** Evaluate the hypotheses, data, and conclusions in a scientific text, corroborating or undercutting them with other sources of information.
9. Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.	**9.** Compare experimental findings presented in a text to information from other sources, noting when the findings support or contradict previous explanations or accounts.	**9.** Integrate information from diverse sources (e.g., video, multimedia sources, experiments, simulations) into a coherent understanding of a concept, process, or phenomenon, noting discrepancies among sources.
Range and Level of Text Complexity		
10. Read informational text independently, proficiently, and fluently in the grades 6–8 text complexity band; read "stretch" texts with scaffolding as needed.	**10.** Read informational text independently, proficiently, and fluently in the grades 9–10 text complexity band; read "stretch" texts with scaffolding as needed.	**10.** Read informational text independently, proficiently, and fluently in the grades 11–CCR text complexity band; read "stretch" texts with scaffolding as needed.

Writing Standards for History/Social Studies and Science 6–12

Following are the standards for grades 6–12, which relate to their College and Career Readiness counterparts by number. The standards below begin at grade 6; standards for K–5 writing in history/social studies and science are integrated into the K–5 standards for writing.

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Text Types and Purposes		
1. Write arguments focused on *discipline-specific content* in which they: a. Introduce a claim about a topic or issue, distinguish it from alternate or opposing claims, and organize the reasons, data, and evidence logically to support the claim. b. Support the claim with logical reasoning and detailed, accurate data and evidence (science) or information from credible primary, secondary, and tertiary sources (history). c. Use words and phrases as well as domain-specific vocabulary to make clear the relationships among claims, reasons, data, and evidence. d. Sustain an objective style and tone. e. Provide a concluding statement or section that follows logically from the argument.	**1.** Write arguments focused on *discipline-specific content* in which they: a. Introduce a precise claim, distinguish it from alternate or opposing claims, and provide an organization that establishes clear relationships among the claim, reasons, data, and evidence. b. Develop a claim fairly with logical reasoning, supplying detailed, accurate data and evidence acquired in a scientifically acceptable form (science) or gathered from credible primary, secondary, and tertiary sources (history). c. Use precise words and phrases as well as domain-specific vocabulary to make clear the relationships between claims and reasons and between reasons and the data and evidence. d. Sustain an objective style and tone while attending to the norms and conventions of the specific discipline. e. Provide a concluding statement or section that follows logically from the argument.	**1.** Write arguments focused on *discipline-specific content* in which they: a. Introduce a substantive claim, establish its significance, distinguish it from alternate or opposing claims, and create an organization so that claims, reasons, data, and evidence are purposefully and logically sequenced. b. Develop a claim thoroughly and fairly with logical reasoning, supplying the most relevant data and evidence acquired in a scientifically acceptable form (science) or gathered from credible primary, secondary, and tertiary sources (history). c. Use precise words and phrases as well as domain-specific vocabulary to make clear the relationships between claims and reasons and between reasons and the data and evidence. d. Sustain an objective style and tone while attending to the norms and conventions of the specific discipline. e. Provide a concluding statement or section that follows logically from the argument.

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Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Text Types and Purposes (continued)		
2. Write informative/explanatory texts, including the narration of historical events or scientific procedures/experiments, in which they: a. Introduce and establish a topic and organize information under concepts or into categories. b. Develop a topic that has historical or scientific significance using well-chosen, relevant facts, data, details, quotations, examples, or other information. c. Use varied links and sentence structures to create cohesion and clarify information and ideas. d. Use precise language and domain-specific vocabulary and sustain a formal, objective style appropriate for a reader seeking information. e. Provide a conclusion that follows logically from the information or explanation presented.	**2.** Write informative/explanatory texts, including the narration of historical events or scientific procedures/experiments, in which they: a. Introduce a topic and organize information under concepts and into categories, making clear the connections and distinctions between key ideas; use formatting and graphics (e.g., headings, figures, tables, graphs, illustrations) as useful to clarify ideas. b. Develop a topic that has historical or scientific significance using well-chosen, relevant, and sufficient facts, data, details, quotations, examples, extended definitions, or other information. c. Use varied transitions and sentence structures to create cohesion, clarify information and ideas, and link major sections in the text. d. Use precise language and domain-specific vocabulary to convey a style appropriate to the specific discipline and context as well as to the expertise of likely readers. e. Provide a conclusion that follows logically from the information or explanation provided and that articulates the implications or significance of the topic.	**2.** Write informative/explanatory texts, including the narration of historical events or scientific procedures/experiments, in which they: a. Introduce a complex topic and organize the information so that each new piece of information builds on that which precedes it to create a unified whole; use formatting and graphics (e.g., headings, figures, tables, graphs, illustrations) as useful to clarify ideas. b. Develop a complex topic that has historical and scientific significance using the most significant and relevant facts, data, details, quotations, examples, extended definitions, or other information. c. Use varied transitional devices and sentence structures to create cohesion, clarify complex information and ideas, and link the major sections of the text. d. Use precise language, domain-specific and technical wording, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the specific discipline and context as well as to the expertise of likely readers. e. Provide a well-developed conclusion that follows logically from the information or explanation provided and that articulates the implications or significance of the topic.
3. Students' narrative skills continue to grow in these grades. The *Standards* require that students be able to incorporate narrative elements effectively into arguments and informative/explanatory texts. In history, students must be able to write narrative accounts about individuals or events of historical import. In science, students must be able to write precise enough descriptions of the step-by-step procedures they use in their investigations that others can replicate them and (possibly) reach the same results.	**3.** Students' narrative skills continue to grow in these grades. The *Standards* require that students be able to incorporate narrative elements effectively into arguments and informative/explanatory texts. In history, students must be able to write narrative accounts about individuals or events of historical import. In science, students must be able to write precise enough descriptions of the step-by-step procedures they use in their investigations that others can replicate them and (possibly) reach the same results.	**3.** Students' narrative skills continue to grow in these grades. The *Standards* require that students be able to incorporate narrative elements effectively into arguments and informative/explanatory texts. In history, students must be able to write narrative accounts about individuals or events of historical import. In science, students must be able to write precise enough descriptions of the step-by-step procedures they use in their investigations that others can replicate them and (possibly) reach the same results.

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Production and Distribution of Writing		
4. Produce writing in which the organization, development, substance, and style are appropriate to task, purpose, and audience.	**4.** Produce writing in which the organization, development, substance, and style are appropriate to task, purpose, and audience.	**4.** Produce writing in which the organization, development, substance, and style are appropriate to task, purpose, and audience.
5. With some guidance and support from peers and adults, strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach after rethinking how well questions of purpose and context have been addressed.	**5.** Strengthen writing as needed by planning, revising, editing, or trying a new approach, focusing on addressing what is most significant for a specific task and context.	**5.** Strengthen writing as needed by planning, revising, editing, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
6. Use technology, including the Internet, to present and cite information effectively in a digital format, including when publishing and responding to writing.	**6.** Use technology, including the Internet, to produce, publish, and collaborate on a shared writing product, incorporating diverse and sometimes conflicting feedback.	**6.** Demonstrate command of technology, including the Internet, to produce, publish, and update work in response to ongoing feedback, including fresh arguments or new information.
Research to Build Knowledge		
7. Perform short, focused research projects in response to a question or problem and generate additional related questions that allow for multiple avenues of exploration.	**7.** Perform short, focused research projects and more sustained research; synthesize multiple sources on a subject to answer a question or solve a problem.	**7.** Perform short, focused research projects and more sustained research; synthesize multiple authoritative sources on a subject to answer a question or solve a problem.
8. Gather relevant information from multiple print and digital sources using effectively tailored searches; assess the credibility and accuracy of each source; and quote or paraphrase the evidence, avoiding plagiarism and following a standard format for citation.	**8.** Gather relevant information from multiple print and digital sources; assess the credibility, accuracy, and strengths and limitations of each source; and integrate selected information into the text, avoiding overreliance on any one source, avoiding plagiarism, and following a standard format for citation.	**8.** Gather relevant information from multiple print and digital sources; assess its credibility and accuracy and its usefulness in terms of purpose, task, and audience; and integrate selected information into the text, avoiding overreliance on any one source, avoiding plagiarism, and following a standard format for citation.
9. Write in response to informational sources, drawing on textual evidence to support analysis and reflection as well as to describe what they have learned.	**9.** Write in response to informational sources, drawing on textual evidence to support analysis and reflection as well as to describe what they have learned.	**9.** Write in response to informational sources, drawing on textual evidence to support analysis and reflection as well as to describe what they have learned.
Range of Writing		
10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.	**10.** Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.	**10.** Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

Appendix B1.5

Common Core Draft Mathematics K-12 Standards

Mathematics | Kindergarten

In Kindergarten, instructional time should focus on two critical areas: (1) representing, comparing and ordering whole numbers and joining and separating sets; (2) describing shapes and space. More learning time in Kindergarten should be devoted to number than to other topics.

(1) Students use numbers, including written numerals, to represent quantities and to solve quantitative problems, such as counting objects in a set; creating a set with a given number of objects; comparing and ordering sets or numerals; and modeling simple joining and separating situations with objects. They choose, combine, and apply effective strategies for answering quantitative questions, including quickly recognizing the cardinalities of small sets of objects, counting and producing sets of given sizes, counting the number of objects in combined sets, or counting the number of objects that remain in a set after some are taken away.

(2) Students describe their physical world using geometric ideas (e.g., shape, orientation, spatial relations) and vocabulary. They identify, name, and describe basic shapes, such as squares, triangles, circles, rectangles, (regular) hexagons, and (isosceles) trapezoids, presented in a variety of ways (e.g., with different sizes or orientations), as well as three-dimensional shapes such as spheres, cubes, and cylinders. They use basic shapes and spatial reasoning to model objects in their environment and to construct more complex shapes.

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Number—Counting and Cardinality K-NCC

Number names

1. Say the number name sequence to 100.
2. Know the decade words to ninety and recite them in order ("ten, twenty, thirty, …").
3. Say the number name sequence forward or backward beginning from a given number within the known sequence (instead of always beginning at 1).
4. Write numbers from 1 to 20 in base-ten notation.

Counting to tell the number of objects

5. Count to answer "how many?" questions about as many as 20 things. *Objects may be arranged in a line, a rectangular array, a circle, or a scattered configuration.*
6. Understand that when counting objects,
   a. The number names are said in the standard order.
   b. Each object is paired with one and only one number name.
   c. The last number name said tells the number of objects counted.
7. Understand that when counting forward, each successive number name refers to a quantity that is 1 larger.

Comparing and ordering numbers

8. Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies. *Include groups with up to ten objects.*
9. Compare and put in order numbers between 1 and 10 presented in written symbols: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.

Number—Operations and the Problems They Solve K-NOP

Composing and decomposing numbers; addition and subtraction

1. Understand addition as putting together—e.g., finding the number of objects in a group formed by putting two groups together. Understand subtraction as taking apart—e.g., finding the number of objects left when a one group is taken from another.
2. Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations. *Note that drawings need not show details, but should show the mathematics in the problem. (This note also applies wherever drawings are mentioned in subsequent standards.)*
3. ❖Decompose numbers less than or equal to 10 into pairs in various ways, e.g., using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3). Compose numbers whose sum is less than or equal to 10, e.g., using objects or drawings, and record each composition by a drawing or equation (e.g., 3 + 1 = 4).❖
4. Compose and decompose numbers less than or equal to 10 in two different ways, and record compositions and decompositions by drawings or equations. *For example, 7 might be composed or decomposed in two different ways by a drawing showing how a group of 2 and a group of 5 together make the same number as do a group of 3 and a group of 4.*
5. ❖Understand that addition and subtraction are related. *For example, when a group of 9 is decomposed into a group of 6 and a group of 3, this means not only 9 = 6 + 3 but also 9 – 3 = 6 and 9 – 6 = 3.*
6. ❖Solve addition and subtraction word problems, and calculate additions and subtractions within 10, e.g., using objects or drawings to represent the problem.
7. Fluently add and subtract, for sums and minuends of 5 or less.

Number—Base Ten K-NBT

Two-digit numbers

1. Understand that 10 can be thought of as a bundle of ones—a unit called a "ten."
2. Understand that a teen number is composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
3. Compose and decompose teen numbers into a ten and some ones, e.g., by using objects or drawings, and record the compositions and decompositions in base-ten notation. *For example, 10 + 8 = 18 and 14 = 10 + 4.*
4. Put in order numbers presented in base-ten notation from 1 to 20 (inclusive), and be able to explain the reasoning.
5. Understand that a decade word refers to one, two, three, four, five, six, seven, eight, or nine tens.
6. Understand that the two digits of a two-digit number represent amounts of tens and ones. *In 29, for example, the 2 represents two tens and the 9 represents nine ones.*

Composing and decomposing ten

7. Decompose 10 into pairs of numbers, e.g., by using objects or drawings, and record each decomposition with a drawing or equation.
8. Compose numbers to make 10, e.g., by using objects or drawings, and record each composition with a drawing or equation.
9. ❖For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.

Measurement and Data K-MD

Direct measurement

1. Understand that objects have measurable attributes, such as length or weight. A single object might have several measurable attributes of interest.
2. Directly compare two objects with a measurable attribute in common, to see which object has "more of" the attribute. *For example, directly compare the heights of two books and identify which book is taller.*

Representing and interpreting data

3. Classify objects or people into given categories; count the numbers in each category and sort the categories by count. *Limit category counts to be less than or equal to 10.*

Geometry K-G

Shapes, their attributes, and spatial reasoning

1. Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above*, *below*, *beside*, *in front of*, *behind*, and *next to*.
2. Understand that names of shapes apply regardless of the orientation or overall size of the shape. *For example, a square in any orientation is still a square. Students may initially need to physically rotate a shape until it is "level" before they can correctly name it.*
3. Understand that shapes can be two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").
4. Understand that shapes can be seen as having parts, such as sides and vertices ("corners"), and that shapes can be put together to compose other shapes.
5. Analyze and compare a variety of two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, component parts (e.g., number of sides and vertices) and other attributes (e.g., having sides of equal length).
6. Combine two- or three-dimensional shapes to solve problems such as deciding which puzzle piece will fit into a place in a puzzle.

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In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for additions and subtractions within 20; (2) developing understanding of whole number relationships, including grouping in tens and ones, (3) developing understanding of linear measurement and measuring lengths, and (4) composing and decomposing geometric shapes.

(1) Students develop strategies for adding and subtracting whole numbers based on their prior work with small numbers. They use a variety of models, including discrete objects and length-based models (e.g., cubes connected to form lengths), to model "put together/take apart," "add to," "take from," and "compare" situations to develop meaning for the operations of addition and subtraction, and to develop strategies to solve arithmetic problems with these operations. Students understand connections between counting and addition and subtraction (i.e., adding two is the same as counting on two). They use properties of addition (commutativity and associativity) to add whole numbers and to create and use increasingly sophisticated strategies based on these properties (e.g., "making tens") to solve addition and subtraction problems within 20. By comparing a variety of solution strategies, children build their understanding of the inverse relationship between addition and subtraction.

(2) Students compare and order whole numbers (at least to 100), to develop understanding of and solve problems involving their relative sizes. They think of whole numbers between 10 and 100 in terms of tens and ones (especially recognizing the numbers 11 to 19 as composed of a ten and some ones). They understand the sequential order of the counting numbers and their relative magnitudes through activities such as representing numbers on paths of numbered things.

(3) Students develop an understanding of the meaning and processes of measurement, including underlying concepts such as partitioning (the mental activity of decomposing the length of an object into equal-sized units) and transitivity (e.g., in terms of length, if object A is longer than object B and object B is longer than object C, then object A is longer than object C). They understand linear measure as an iteration of units, and use rulers and other measurement tools with that understanding.

(4) Students compose and decompose plane and solid figures (e.g., put two congruent isosceles triangles together to make a rhombus), building understanding of part-whole relationships as well as the properties of the original and composite shapes. As they combine solid and plane figures, they recognize them from different perspectives and orientations, describe their geometric attributes, and determine how they are alike and different, to develop the background for measurement and for initial understandings of properties such as congruence and symmetry.

Number—Operations and the Problems They Solve 1-NOP

Addition and subtraction

1. ❖Understand the properties of addition.
   a. Addition is commutative. *For example, if 3 cups are added to a stack of 8 cups, then the total number of cups is the same as when 8 cups are added to a stack of 3 cups; that is, 8 + 3 = 3 + 8.*
   b. Addition is associative. *For example, 4 + 3 + 2 can be found by first adding 4 + 3 = 7 then adding 7 + 2 = 9, or by first adding 3 + 2 = 5 then adding 4 + 5 = 9.*
   c. 0 is the additive identity.
2. ❖Explain and justify properties of addition and subtraction, e.g., by using representations such as objects, drawings, and story contexts. Explain what happens when:
   a. The order of addends in a sum is changed in a sum with two addends.
   b. 0 is added to a number.
   c. A number is subtracted from itself.
   d. One addend in a sum is increased by 1 and the other addend is decreased by 1. *Limit to two addends.*
3. ❖Understand that addition and subtraction have an inverse relationship. *For example, if 8 + 2 = 10 is known, then 10 – 2 = 8 and 10 – 8 = 2 are also known.*
4. ❖Understand that when all but one of three numbers in an addition or subtraction equation are known, the unknown number can be found. *Limit to cases where the unknown number is a whole number.*
5. Understand that addition can be recorded by an expression (e.g., 6 + 3), or by an equation that shows the sum (e.g., 6 + 3 = 9). Likewise, subtraction can be recorded by an expression (e.g., 9 – 5), or by an equation that shows the difference (e.g., 9 – 5 = 4).

Describing situations and solving problems with addition and subtraction

6. Understand that addition and subtraction apply to situations of adding-to, taking-from, putting together, taking apart, and comparing. *See Glossary, Table 1.*
7. ❖Solve word problems involving addition and subtraction within 20, e.g., by using objects, drawings and equations to represent the problem. *Students should work with all of the addition and subtraction situations shown in the Glossary, Table 1, solving problems with unknowns in all positions, and representing these situations with equations that use a symbol for the unknown (e.g., a question mark or a small square). Grade 1 students need not master the more difficult problem types.*
8. Solve word problems involving addition of three whole numbers whose sum is less than or equal to 20.

Number—Base Ten 1-NBT

Numbers up to 100

1. Read and write numbers to 100.
2. Starting at any number, count to 100 or beyond.
3. Understand that when comparing two-digit numbers, if one number has more tens, it is greater; if the amount of tens is the same in each number, then the number with more ones is greater.
4. Compare and order two-digit numbers based on meanings of the tens and ones digits, using > and < symbols to record the results of comparisons.

Adding and subtracting in base ten

5. Calculate mentally, additions and subtractions within 20.
   a. Use strategies that include counting on; making ten (for example, 7 + 6 = 7 + 3 + 3 = 10 + 3 = 13); and decomposing a number (for example, 17 – 9 = 17 – 7 – 2 = 10 – 2 = 8).
6. Demonstrate fluency in addition and subtraction within 10.
7. Understand that in adding or subtracting two-digit numbers, one adds or subtracts like units (tens and tens, ones and ones) and sometimes it is necessary to compose or decompose a higher value unit.
8. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count.
9. Add one-digit numbers to two-digit numbers, and add multiples of 10 to one-digit and two-digit numbers.
10. Explain addition of two-digit numbers using concrete models or drawings to show composition of a ten or a hundred.
11. ❖Add two-digit numbers to two-digit numbers using strategies based on place value, properties of operations, and/or the inverse relationship between addition and subtraction; explain the reasoning used.

Measurement and Data 1-MD

Length measurement

1. Order three objects by length; compare the length of two objects indirectly by using a third object.
2. Understand that the length of an object can be expressed numerically by using another object as a length unit (such as a paper-clip, yardstick, or inch length on a ruler). The object to be measured is partitioned into as many equal parts as possible with the same length as the length unit. The length measurement of the object is the number of length units that span it with no gaps or overlaps. *For example, "I can put four paperclips end to end along the pencil, so the pencil is four paperclips long."*
3. Measure the length of an object by using another object as a length unit.

Time measurement

4. Tell time from analog clocks in hours and half- or quarter-hours.

Representing and interpreting data

5. Organize, represent, and interpret data with several categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

Geometry 1-G

Shapes, their attributes, and spatial reasoning

1. Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size) for a wide variety of shapes.
2. Understand that shapes can be joined together (composed) to form a larger shape or taken apart (decomposed) into a collection of smaller shapes. Composing multiple copies of some shapes creates tilings. *In this grade, "circles," "rectangles," and other shapes include their interiors as well as their boundaries.*
3. Compose two-dimensional shapes to create a unit, using cutouts of rectangles, squares, triangles, half-circles, and quarter-circles. Form new shapes by repeating the unit.
4. Compose three-dimensional shapes to create a unit, using concrete models of cubes, right rectangular prisms, right circular cones, and right circular cylinders. Form new shapes by repeating the unit. *Students do not need to learn formal names such as "right rectangular prism."*
5. Decompose circles and rectangles into two and four equal parts. Describe the parts using the words *halves*, *fourths*, and *quarters*, and using the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as two of, or four of the parts. Understand that decomposing into more equal shares creates smaller shares.
6. Decompose two-dimensional shapes into rectangles, squares, triangles, half-circles, and quarter-circles, including decompositions into equal shares.

Mathematics | Grade 2

In Grade 2, instructional time should focus on three critical areas: (1) developing understanding of base-ten notation; (2) developing fluency with additions and subtractions within 20 and fluency with multi-digit addition and subtraction; and (3) describing and analyzing shapes.

(1) Students develop an understanding of the base-ten system (at least to 1000). Their understanding of the base-ten system includes ideas of counting in units (twos, fives, and tens) and multiples of hundreds, tens, and ones, as well as number relationships, including comparing and ordering. They understand multi-digit numbers (up to 1000) written in base-ten notation, recognizing that the digits in each place represent thousands, hundreds, tens, or ones (e.g., 853 is 8 hundreds + 5 tens + 3 ones).

(2) Students use their understanding of addition to develop fluency with additions and subtractions within 20. They solve arithmetic problems by applying their understanding of models for addition and subtraction (such as combining or separating sets or using number lines that begin with zero), relationships and properties of numbers, and properties of addition. They develop, discuss, and use efficient, accurate, and generalizable methods to compute sums and differences of two-digit whole numbers. They select and accurately apply methods that are appropriate for the context and the numbers involved to mentally calculate sums and differences. They develop fluency with efficient procedures, including standard algorithms, for adding and subtracting whole numbers; understand and explain why the procedures work based on their understanding of base-ten notation and properties of operations; and use them to solve problems.

(3) Students describe and analyze shapes by examining their sides and angles. Students investigate, describe, and reason about decomposing and combining shapes to make other shapes. Through building, drawing, and analyzing two- and three-dimensional shapes, students develop a foundation for understanding attributes of two- and three-dimensional space such as area and volume, and properties such as congruence and symmetry that they will learn about in later grades.

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Number—Operations and the Problems They Solve 2-NOP

Addition and subtraction

1. ❖Explain and justify properties of addition and subtraction, e.g., by using representations such as objects, drawings, and story contexts. Include properties such as:
   a. Changing the order of addends does not change their sum.
   b. Subtracting one addend from a sum of two numbers results in the other addend.
   c. If more is subtracted from a number, the difference is decreased, and if less is subtracted the difference is increased.
   d. In an addition equation, each addend can be decomposed and the parts can be recombined in any order without changing the sum. *For example, $5 + 3 = 8$. Because 5 decomposes as $4 + 1$, the first addend can be replaced by $4 + 1$, yielding $(4 + 1) + 3 = 8$. Recombining in two different orders: $4 + 4 = 8$, also $7 + 1 = 8$.*

Describing situations and solving problems with addition and subtraction

2. ❖Solve word problems involving addition and subtraction within 100, e.g., by using drawings or equations to represent the problem. *Students should work with all of the addition and subtraction situations shown in the Glossary, Table 1, solving problems with unknown sums, addends, differences, minuends, and subtrahends, and representing these situations with equations that use a symbol for the unknown (e.g., a question mark or a small square). Focus on the more difficult problem types.*
3. Solve two-step word problems involving addition and subtraction within 100, e.g., by using drawings or equations to represent the problem.

Number—Base Ten 2-NBT

Numbers up to 1000

1. Understand that 100 can be thought of as a bundle of tens—a unit called a "hundred."
2. Read and write numbers to 1000 using base-ten notation, number names, and expanded form.
3. Count within 1000; skip count by 2s, 5s, 10s, and 100s.
4. Understand that when comparing three-digit numbers, if one number has more hundreds, it is greater; if the amount of hundreds is the same in each number, then the number with more tens is greater. If the amount of tens and hundreds is the same in each number, then the number with more ones is greater.
5. Compare and order three-digit numbers based on meanings of the hundreds, tens, and ones digits.

Adding and subtracting in base ten

6. Fluently add and subtract within 20. By end of Grade 2, know from memory sums of one-digit numbers.
7. Mentally compute sums and differences of multiples of 10. *For example, mentally calculate $130 - 80$.*
8. Understand that in adding or subtracting three-digit numbers, one adds or subtracts like units (hundreds and hundreds, tens and tens, ones and ones) and sometimes it is necessary to compose or decompose a higher value unit.
9. Given a number from 100 to 900, mentally find 10 more or 10 less than the number, and mentally find 100 more or 100 less than the number, without counting.
10. Understand that algorithms are predefined steps that give the correct result in every case, while strategies are purposeful manipulations that may be chosen for specific problems, may not have a fixed order, and may be aimed at converting one problem into another. *For example, one might mentally compute $503 - 398$ as follows: $398 + 2 = 400$, $400 + 100 = 500$, $500 + 3 = 503$, so the answer is $2 + 100 + 3$, or 105.*
11. ❖ Compute sums and differences of one-, two-, and three-digit numbers using strategies based on place value, properties of operations, and/or the inverse relationship between addition and subtraction; explain the reasoning used.
12. ❖Explain why addition and subtraction strategies and algorithms work, using place value and the properties of operations. *Include explanations supported by drawings or objects. A range of reasonably efficient algorithms may be covered, not only the standard algorithm.*
13. Compute sums of two three-digit numbers, and compute sums of three or four two-digit numbers, using the standard algorithm; compute differences of two three-digit numbers using the standard algorithm.

Measurement and Data 2-MD

Length measurement

1. Understand that 1 inch, 1 foot, 1 centimeter, and 1 meter are conventionally defined lengths used as standard units.
2. Measure lengths using measurement tools such as rulers, yardsticks and measuring tapes; understand that these tools are used to find out how many standard length units span an object with no gaps or overlaps, when the 0 mark of the tool is aligned with an end of the object.

3. Understand that when measuring a length, if a smaller unit is used, more copies of that unit are needed to measure the length than would be necessary if a larger unit were used.
4. Understand that units can be decomposed into smaller units, e.g., 1 foot can be decomposed into 12 inches and 1 meter can be decomposed into 100 centimeters. A small number of long units might compose a greater length than a large number of small units.
5. Understand that lengths can be compared by placing objects side by side, with one end lined up. The difference in lengths is how far the longer extends beyond the end of the shorter.
6. Understand that a sum of two whole numbers can represent a combination of two lengths; a difference of two whole numbers can represent a difference in length; find total lengths and differences in lengths using addition and subtraction.

Time and money

7. Find time intervals between hours in one day.
8. Solve word problems involving dollar bills, quarters, dimes, nickels and pennies. *Do not include dollars and cents in the same problem.*

Representing and interpreting data

9. Generate measurement data by measuring whole-unit lengths of several objects, or by making repeated measurements of the same object. Show the measurements by making a dot plot, where the horizontal scale is marked off in whole-number units.
10. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with several categories. Connect representations on bar graph scales, rulers, and number lines that begin with zero. Solve simple Put Together/Take Apart and Compare problems using information presented in a bar graph. *See Glossary, Table 1.*

Geometry 2-G

Shapes, their attributes, and spatial reasoning

1. Understand that different categories of shapes (e.g., rhombuses, trapezoids, rectangles, and others) can be united into a larger category (e.g., quadrilaterals) on the basis of shared attributes (e.g., having four straight sides).
2. Identify and name polygons of up to six sides by the number of their sides or angles.
3. Recognize rectangles, rhombuses, squares and trapezoids as examples of quadrilaterals; draw examples of quadrilaterals that do not belong to any of these subcategories.
4. Draw and identify shapes that have specific attributes, such as number of equal sides or number of equal angles. *Sizes of lengths and angles are compared directly or visually, not compared by measuring.*
5. Recognize objects as resembling spheres, right circular cylinders, and right rectangular prisms. *Students do not need to learn formal names such as "right rectangular prism."*
6. Decompose circular and rectangular objects into two, three, or four equal parts. Describe the parts using the words *halves*, *thirds*, *half of*, *a third of*, etc.; describe the wholes as two halves, three thirds, four fourths. Recognize that a half, a third, or a fourth of a circular or rectangular object—a graham cracker, for example—is the same size regardless of its shape.

Mathematics | Grade 3

In Grade 3, instructional time should focus on four critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, starting with unit fractions; (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes. Multiplication, division, and fractions are the most important developments in Grade 3.

(1) Students develop an understanding of the meanings of multiplication and division of whole numbers through the use of representations such as equal-sized groups, arrays, area models, and equal jumps on number lines for multiplication; and successive subtraction, partitioning, and sharing for division. Through this process, numbers themselves take on new meaning and are no longer only counters for single objects. They represent groups, a number of groups (for example, 3 teams of 6 people), or a comparative factor (3 times as long).

Students use properties of operations to calculate products of whole numbers. They use increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors. By comparing a variety of solution strategies, students learn the inverse relationship between multiplication and division.

(2) Students develop an understanding of a definition of a fraction, beginning with unit fractions. They use fractions to represent parts of a whole or distances on a number line that begins with zero. Students understand that the size of a fractional part is relative to the size of the whole (for example, $\frac{1}{4}$ of a mile is longer than $\frac{3}{4}$ of a foot, even though $\frac{1}{4} < \frac{3}{4}$), and they are able to use fractions to represent numbers equal to, less than, and greater than one. They solve problems that involve comparing and ordering fractions using by models or strategies based on noticing common numerators or denominators.

(3) Students recognize area as an attribute of two-dimensional regions. They understand that area can be quantified by finding the total number of same-size units of area required to cover the shape without gaps or overlaps. They understand that a 1-unit by 1-unit square is the standard unit for measuring area. Students understand that rectangular arrays can be decomposed into identical rows or into identical columns. By decomposing rectangles into rectangular arrays of squares, students connect area measure to the area model used to represent multiplication, and they use this connection to justify using multiplication to determine the area of a rectangle. Students contrast area with perimeter.

(4) Students describe, analyze, and compare properties of two-dimensional shapes. They compare and classify the shapes by their sides and angles, and connect these with definitions of shapes. Students investigate, describe, and reason about decomposing and combining polygons to make other polygons. Through building, drawing, and analyzing two-dimensional shapes, students deepen their understanding of attributes and properties of two-dimensional objects.

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Multiplication and division

1. Understand that multiplication of whole numbers is repeated addition. *For example, 5 × 7 means 7 added to itself 5 times. Products can be represented by rectangular arrays, with one factor the number of rows and the other the number of columns.*
2. ❖Understand the properties of multiplication.
   a. Multiplication is commutative. *For example, the total number in 3 groups with 6 things each is the same as the total number in 6 groups with 3 things each, that is, 3 × 6 = 6 × 3.*
   b. Multiplication is associative. *For example, 4 × 3 × 2 can be calculated by first calculating 4 × 3 = 12 then calculating 12 × 2 = 24, or by first calculating 3 × 2 = 6 then calculating 4 × 6 = 24.*
   c. 1 is the multiplicative identity.
   d. Multiplication distributes over addition (the distributive property). *For example, 5 × (3 + 4) = (5 × 3) + (5 × 4).*
3. ❖Explain and justify properties of multiplication and division, e.g., by using representations such as objects, drawings, and story contexts. Include properties such as:
   a. Changing the order of two factors does not change their product.
   b. The product of a number and 1 is the number.
   c. Dividing a nonzero number by itself yields 1.
   d. Multiplying a quantity by a nonzero number, then dividing by the same number, yields the original quantity.
   e. When one factor in a product is multiplied by a number and another factor divided by the same number, the product is unchanged. *Limit to multiplying and dividing by numbers that result in whole-number quotients.*
   f. Products where one factor is a one-digit number can be computed by decomposing one factor as the sum of two numbers, multiplying each number by the other factor, and adding the two products.
4. ❖Understand that multiplication and division have an inverse relationship. *For example, if 5 × 7 = 35 is known, then 35 ÷ 5 = 7 and 35 ÷ 7 = 5 are also known. The division 35 ÷ 5 means the number which yields 35 when multiplied by 5; because 5 × 7 = 35, then 35 ÷ 5 = 7.*
5. ❖Understand that when all but one of three numbers in a multiplication or division equation are known, the unknown number can be found. *Limit to cases where the unknown number is a whole number.*

Describing situations and solving problems with multiplication and division

6. Understand that multiplication and division apply to situations with equal groups, arrays or area, and comparing. *See Glossary, Table 2.*
7. ❖Solve word problems involving multiplication and division within 100, using an equation with a symbol for the unknown to represent the problem. *This standard is limited to problems with whole-number quantities and whole-number quotients. Focus on situations described in the Glossary, Table 2.*
8. ❖Solve one- or two-step word problems involving the four operations. *This standard is limited to problems with whole-number quantities and whole-number quotients.*
9. Understand that multiplication and division can be used to compare quantities (see Glossary, Table 2); solve multiplicative comparison problems with whole numbers (problems involving the notion of "times as much").

Number—Base Ten 3-NBT

Numbers up to 10,000

1. Understand that 1000 can be thought of as a bundle of hundreds—a unit called a "thousand."
2. Read and write numbers to 10,000 using base-ten notation, number names, and expanded form.
3. Count within 10,000; skip count by 10s, 100s and 1000s.
4. Understand that when comparing four-digit numbers, if one number has more thousands, it is greater; if the amount of thousands is the same in each number, then the number with more hundreds is greater; and so on. Compare and order four-digit numbers based on meanings of the digits.

Adding and subtracting in base ten

5. Mentally calculate sums and differences of multiples of 10, 100, and 1000. *For example, mentally calculate 1300 – 800*
6. Given a number from 1000 to 9000, mentally find 100 more or 100 less than the number, and mentally find 1000 more or 1000 less than the number, without counting.

Multiplying and dividing in base ten

7. ❖Understand that the distributive property is at the heart of strategies and algorithms for multiplication and division computations with numbers in base-ten notation; use the distributive property and other properties of operations to explain patterns in the multiplication table and to derive new multiplication and division equations from known ones. *For example, the distributive property makes it possible to multiply 4×7 by decomposing 7 as $5 + 2$ and using $4 \times 7 = 4 \times (5 + 2) = (4 \times 5) + (4 \times 2) = 20 + 8 = 28$.*
8. Fluently multiply one-digit numbers by 10.
9. Use a variety of strategies for multiplication and division within 100. By end of Grade 3, know from memory products of one-digit numbers where one of the factors is 2, 3, 4, or 5.

Number—Fractions 3-NF

Fractions as representations of numbers

1. Understand that a unit fraction corresponds to a point on a number line. *For example, 1/3 represents the point obtained by decomposing the interval from 0 to 1 into three equal parts and taking the right-hand endpoint of the first part. In Grade 3, all number lines begin with zero.*
2. Understand that fractions are built from unit fractions. *For example, 5/4 represents the point on a number line obtained by marking off five lengths of ¼ to the right of 0.*
3. Understand that two fractions are equivalent (represent the same number) when both fractions correspond to the same point on a number line. Recognize and generate equivalent fractions with denominators 2, 3, 4, and 6 (e.g., $1/2 = 2/4$, $4/6 = 2/3$), and explain the reasoning.
4. Understand that whole numbers can be expressed as fractions. *Three important cases are illustrated by the examples $1 = 4/4$, $6 = 6/1$, and $7 = (4 \times 7)/4$. Expressing whole numbers as fractions can be useful for solving problems or making calculations.*

Fractional quantities

5. Understand that fractions apply to situations where a whole is decomposed into equal parts; use fractions to describe parts of wholes. *For example, to show 1/3 of a length, decompose the length into 3 equal parts and show one of the parts.*
6. Compare and order fractional quantities with equal numerators or equal denominators, using the fractions themselves, tape diagrams, number line representations, and area models. Use > and < symbols to record the results of comparisons.

Measurement and Data 3-MD

The number line and units of measure

1. Understand that a number line has an origin (0) and a unit (1), with whole numbers one unit distance apart. Use number lines to represent problems involving distances, elapsed time, amounts of money and other quantities. *In such problems, the interval from 0 to 1 may represent a unit of distance, time, money, etc.*
2. Understand that a unit of measure can be decomposed into equal-sized parts, whose sizes can be represented as fractions of the unit. Convert measurements in one unit to measurements in a smaller or a larger unit, and solve problems involving such mixed units (e.g., feet and inches, weeks and days).

Perimeter and area

3. Understand and use concepts of area measurement.
   a. A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.
   b. A plane figure which can be covered without gaps or overlaps by *n* unit squares has an area of *n* square units. Areas of some other figures can be measured by using fractions of unit squares or using figures whose areas have been found by decomposing other figures.
   c. When measuring an area, if a smaller unit of measurement is used, more units must be iterated to measure the area in those units.
   d. Determine and compare areas by counting square units. *Use cm^2, m^2, in^2, ft^2, and improvised units.*
4. Understand that multiplication of whole numbers can be represented by area models; a rectangular region that is *a* length units by *b* length units (where *a* and *b* are whole numbers) and tiled with unit squares illustrates why the rectangle encloses an area of $a \times b$ square units.
5. Solve problems involving perimeters of polygons.
   a. Add given side lengths, and multiply for the case of equal side lengths.
   b. ❖Find an unknown length of a side in a polygon given the perimeter and all other side lengths; represent these problems with equations involving a letter for the unknown quantity.
   c. Exhibit rectangles with the same perimeter and different area, and with the same area and different perimeter.

Representing and interpreting data

6. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. *Include single-unit scales and multiple-unit scales; for example, each square in the bar graph might represent 1 pet, 5 pets, or 10 pets.*
7. Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a dot plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.

Geometry 3-G

Properties of 2-dimensional shapes

1. Understand that a given category of plane figures (e.g., triangles) has subcategories (e.g., isosceles triangles) defined by special properties.
2. Describe, analyze, compare and classify two-dimensional shapes by their properties and connect these properties to the classification of shapes into categories and subcategories (e.g., squares are "special rectangles" as well as "special rhombuses"). *Focus on triangles and quadrilaterals.*

Structuring rectangular shapes

3. Understand that rectangular regions can be tiled with squares in rows and columns, or decomposed into such arrays.
4. Structure a rectangular region spatially by decomposing it into rows and columns of squares. Determine the number of squares in the region using that spatial structure (e.g., by multiplication or skip counting).
5. Understand that shapes can be decomposed into parts with equal areas; the area of each part is a unit fraction of the whole. *For example, when a shape is partitioned into 4 parts with equal area, the area of each part is ¼ of the area of the shape.*

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Mathematics | Grade 4

In Grade 4, instructional time should focus on four critical areas: (1) continuing to develop understanding and fluency with whole number multiplication, and developing understanding of multi-digit whole number division; (2) developing an understanding of addition and subtraction of fractions with like denominators, multiplication of fractions by whole numbers, and division of whole numbers with fractional answers; (3) developing an understanding of area; and (4) understanding that geometric figures can be analyzed and classified using properties such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.

(1) Students use understandings of multiplication to develop fluency with multiplication and division within 100. They apply their understanding of models for multiplication (equal-sized groups, arrays, area models, equal intervals on a number line), place value, and properties of operations, in particular the distributive property, as they develop, discuss, and use efficient, accurate, and generalizable methods to compute products of multi-digit whole numbers. Depending on the numbers and the context, they select and accurately apply appropriate methods to estimate products or mentally calculate products. They develop fluency with efficient procedures, including the standard algorithm, for multiplying whole numbers; understand and explain why the procedures work based on place value and properties of operations; and use them to solve problems. Students apply their understanding of models for division, place value, properties of operations, and the relationship of division to multiplication as they develop, discuss, and use efficient, accurate, and generalizable procedures to find quotients involving multi-digit dividends. They select and accurately apply appropriate methods to estimate quotients and mentally calculate quotients, depending upon the context and the numbers involved.

(2) Students develop understanding of operations with fractions. They apply their understandings of fractions as built from unit fractions, and use fraction models to represent the addition and subtraction of fractions with like denominators. Students use the meaning of fractions and the meaning of multiplication to understand and explain why the procedure for multiplying a fraction by a whole number makes sense. They understand and explain the connection between division and fractions.

(3) Students develop their understanding of area. They understand and apply the area formula for rectangles and also find areas of shapes that can be decomposed into rectangles. They select appropriate units, strategies (e.g., decomposing shapes), and tools for solving problems that involve estimating and measuring area.

(4) Students describe, analyze, compare, and classify two-dimensional shapes. Through building, drawing, and analyzing two-dimensional shapes, students deepen their understanding of properties of two-dimensional objects and the use of them to solve problems involving symmetry.

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Number—Operations and the Problems They Solve 4-NOP

Multiplication and division

1. Find the factor pairs for a given whole number less than or equal to 100; recognize prime numbers as numbers greater than 1 with exactly one factor pair. *Example: The factor pairs of 42 are {42, 1}, {21, 2}, {14, 3}, {7, 6}.*

Problem solving with the four operations

2. ❖Solve multistep word problems involving the four operations with whole numbers.
3. ❖Solve problems posed with both whole numbers and fractions. Understand that while quantities in a problem might be described with whole numbers, fractions, or decimals, the operations used to solve the problem depend on the relationships between the quantities regardless of which number representations are involved.
4. Assess the reasonableness of answers using mental computation and estimation strategies including rounding to the nearest 10 or 100.

Number—Base Ten 4-NBT

Numbers up to 100,000

1. Understand that a digit in one place represents ten times what it represents in the place to its right. *For example, 7 in the thousands place represents 10 times as many as than 7 in the hundreds place.*
2. Read, write and compare numbers to 100,000 using base-ten notation, number names, and expanded form.

Multiplying and dividing in base ten

3. Understand how the distributive property and the expanded form of a multi-digit number can be used to calculate products of multi-digit numbers.
   a. ❖The product of a one-digit number times a multi-digit number is the sum of the products of the one-digit number with the summands in the expanded form of the multi-digit number. Illustrate this numerically and visually using equations, rectangular arrays, area models, and tape diagrams.
   b. Algorithms for multi-digit multiplication can be derived and explained by writing multi-digit numbers in expanded form and applying the distributive property.
4. Fluently multiply and divide within 100. By end of Grade 4, know from memory products of one-digit numbers where one of the factors is 6, 7, 8, or 9.
5. Mentally calculate products of one-digit numbers and one-digit multiples of 10, 100, and 1000 (e.g., 7×6000). Mentally calculate whole number quotients with divisors of 10 and 100.
6. Compute products and whole number quotients of two-, three- or four-digit numbers and one-digit numbers, and compute products of two two-digit numbers, using strategies based on place value, the properties of operations, and/or the inverse relationship between multiplication and division; explain the reasoning used.
7. Explain why multiplication and division strategies and algorithms work, using place value and the properties of operations. *Include explanations supported by drawings, equations, or both. A range of reasonably efficient algorithms may be covered, not only the standard algorithms.*
8. Compute products of two-digit numbers using the standard algorithm, and check the result using estimation.
9. Given two whole numbers, find an equation displaying the largest multiple of one which is less than or equal to the other. *For example, given 325 and 7, the equation $325 = 46 \times 7 + 3$ shows the largest multiple of 7 less than or equal to 325.*

Number—Fractions 4-NF

Operations on fractions

1. Understand addition of fractions:
   a. Adding or subtracting fractions with the same denominator means adding or subtracting copies of unit fractions. *For example, $2/3 + 4/3$ is 2 copies of $1/3$ plus 4 copies of $1/3$, or 6 copies of $1/3$ in all, that is $6/3$.*
   b. Sums of related fractions can be computed by replacing one with an equivalent fraction that has the same denominator as the other. *For example, the sum of the related fractions $2/3$ and $1/6$ can be computed by rewriting $2/3$ as $4/6$ and computing $4/6 + 1/6 = 5/6$.*
2. Compute sums and differences of fractions with like denominators, add and subtract related fractions within 1 (e.g., $1/2 + 1/4$, $3/10 + 4/100$, $7/8 - 1/4$), and solve word problems involving these operations.
3. ❖ Understand that the meaning of multiplying a fraction by a whole number comes from interpreting multiplication by a whole number as repeated addition. *For example, $3 \times 2/5 = 6/5$ because $3 \times 2/5 = 2/5 + 2/5 + 2/5 = 6/5$.*

4. Solve word problems that involve multiplication of fractions by whole numbers; represent multiplication of fractions by whole numbers using tape diagrams and area models that explain numerical results.
5. ❖Understand that fractions give meaning to the quotient of any whole number by any non-zero whole number. *For example, 3 ÷ 4 = 3/4, because 3/4 multiplied by 4 equals 3. (The division 3 ÷ 4 means the number which yields 3 when multiplied by 4.)*
6. Solve word problems that involve non-whole number quotients of whole numbers; represent quotients of whole numbers using tape diagrams and area models that explain numerical results.

Decimal concepts

7. Understand that a two-digit decimal is a sum of fractions with denominators 10 and 100. *For example, 0.34 is 3/10 + 4/100.*
8. Use decimals to hundredths to describe parts of wholes; compare and order decimals to hundredths based on meanings of the digits; and write fractions of the form *a*/10 or *a*/100 in decimal notation. *Use > and < symbols to record the results of comparisons.*

Measurement and Data 4-MD

The number line and units of measure

1. Understand that the unit length on a number line (interval from 0 to 1) can be divided into parts of equal fractional length. Draw number line representations of problem situations involving length, height, and distance including fractional or decimal units. *For example, show distances along a race course to tenths of a mile on a number line, by dividing the unit length into 10 equal parts to get parts of length 1/10; the endpoint of the segment of 1/10 length from 0 represents 1/10 of a mile from the starting point of the race. In Grade 4, all numbers lines begin with zero.*

Perimeter and area

2. Understand that if a region is decomposed into several disjoint pieces, then the area of the region can be found by adding the areas of the pieces (when these areas are expressed in the same units).
3. ❖Apply the formulas for area of squares and rectangles. Measure and compute whole-square-unit areas of objects and regions enclosed by geometric figures which can be decomposed into rectangles. *Limit to situations requiring products of one-or two-digit numbers.*
4. ❖Find one dimension of a rectangle, given the other dimension and the area or perimeter; find the length of one side of a square, given the area or perimeter. Represent these problems using equations involving a letter for the unknown quantity.

Angle measurement

5. Understand what an angle is and how it is measured:
   a. An angle is formed by two rays with a common endpoint.
   b. An angle is measured by reference to a circle with its center at the common endpoint of the rays. The measure of an angle is based on the fraction of the circle between the points where the two rays intersect the circle.
   c. A one-degree angle turns through 1/360 of a circle, where the circle is centered at the common endpoint of its rays; the measure of a given angle is the number of one-degree angles turned with no gaps or overlaps.
6. Measure angles in whole-number degrees using a protractor; sketch angles of specified measure; ❖find the measure of a missing part of an angle, given the measure of the angle and the measure of a part of it, representing these problems with equations involving a letter for the unknown quantity.

Representing and interpreting data

7. Make a dot plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in dot plots. *For example, from a dot plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*

Geometry 4-G

Lines and angles

1. Draw points, lines, line segments, rays, angles, and perpendicular and parallel lines; identify these in plane figures.
2. Identify right angles, and angles smaller than or greater than a right angle in geometric figures; recognize right triangles.
3. Classify shapes based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of specified size.

Line symmetry

4. Understand that a line of symmetry for a geometric figure is a line across the figure such that the figure can be folded along the line into matching parts

5. Identify line-symmetric figures; given a horizontal or vertical line and a drawing that is not a closed figure, complete the drawing to create a figure that is symmetric with respect to the given line.

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Mathematics | Grade 5

In Grade 5, instructional time should focus on four critical areas: (1) developing fluency with addition and subtraction of fractions, developing understanding of the multiplication of fractions and of division of fractions in limited cases (fractions divided by whole numbers and whole numbers divided by unit fractions); (2) developing understanding of and fluency with division of multi-digit whole numbers; (3) developing understanding of and fluency with addition, subtraction, multiplication, and division of decimals; and (4) developing understanding of volume.

(1) Students apply their understanding of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators. They develop fluency in calculating sums and differences of fractions, and make reasonable estimates of them. Students also use the meaning of fractions, of multiplication and division, and the inverse relationship between multiplication and division to understand and explain why the procedures for multiplying and dividing fractions make sense. (Note: this is limited to the case of dividing fractions by whole numbers and whole numbers by unit fractions.)

(2) Students develop fluency with division of whole numbers; understand why procedures work based on the meaning of base-ten notation and properties of operations; and use these procedures to solve problems. Based on the context of a problem situation, they select the most useful form of the quotient for the answer and interpret it appropriately.

(3) Students apply their understandings of models for decimals, decimal notation, and properties of operations to compute sums and differences of finite decimals. They develop fluency in these computations, and make reasonable estimates of their results. Students use the relationship between decimals and fractions, as well as the relationship between finite decimals and whole numbers (i.e., a finite decimal multiplied by an appropriate power of 10 is a whole number), to understand and explain why the procedures for multiplying and dividing finite decimals make sense. They compute products and quotients of finite decimals efficiently and accurately.

(4) Students recognize volume as an attribute of three-dimensional space. They understand that volume can be quantified by finding the total number of same-size units of volume required to fill the space without gaps or overlaps. They understand that a 1-unit by 1-unit by 1-unit cube is the standard unit for measuring volume. They select appropriate units, strategies, and tools for solving problems that involve estimating and measuring volume. They decompose three-dimensional shapes and find volumes of right rectangular prisms by viewing them as decomposed into layers of arrays of cubes. They measure necessary attributes of shapes in order to determine volumes to solve problems.

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Whole numbers in base ten

1. Compute quotients of two-, three-, and four-digit whole numbers and two-digit whole numbers using strategies based on place value, the properties of operations, and/or the inverse relationship between multiplication and division; explain the reasoning used.
2. Explain why division strategies and algorithms work, using place value and the properties of operations. *Include explanations supported by drawings, equations, or both. A range of reasonably efficient algorithms may be covered, not only the standard algorithm.*
3. Use the standard algorithm to compute quotients of two-, three- and four-digit whole numbers and two-digit whole numbers, expressing the results as an equation (e.g., 145 = 11 × 13 + 2 or 120 ÷ 7 = 17 1/7).
4. Fluently add, subtract and multiply whole numbers using the standard algorithm for each operation.

Decimal concepts

5. Read, write, and compare numbers expressed as decimals. Understand that a digit in one place represents ten times what it represents in the place to its right. *For example, 7 in the hundredths place represents 10 times as many as 7 in the thousandths place.*
6. Round decimals (to hundredths) to the nearest whole number.
7. Write fractions in decimal notation for fractions with denominators 2, 4, 5, 8, 10, and 100.

Operations on decimals

8. Understand that in adding or subtracting finite decimals, one adds or subtracts like units (tenths and tenths, hundredths and hundredths, etc.) and sometimes it is necessary to compose or decompose a higher value unit.
9. Fluently find 0.1 more than a number and less than a number; 0.01 more than a number and less than a number; and 0.001 more than a number and less than a number, for numbers expressed as finite decimals.
10. Compute sums and differences of finite decimals by expressing the decimals as fractions and adding the fractions. *For example, 0.05 + 0.91 = 5/100 + 91/100 = 96/100 or 0.96.*
11. Compute sums, differences, products, and quotients of finite decimals using strategies based on place value, the properties of operations, and/or the inverse relationships between addition and subtraction and between multiplication and division; explain the reasoning used. *For example, transform 1.5 ÷ 0.3 into 15 ÷ 3 = 5.*
12. Explain why strategies and algorithms for computations with finite decimals work. *Include explanations supported by drawings, equations, or both. A range of reasonably efficient algorithms may be covered, not only the standard algorithm.*
13. Use the standard algorithm for each of the four operations on decimals (to hundredths).
14. Solve word problems involving operations on decimals.

Number—Fractions 5-NF

Fraction equivalence

1. ❖Understand fraction equivalence:
   a. Multiplying the numerator and denominator of a fraction by the same nonzero whole number produces an equivalent fraction. *For example, 2/3 = (2 × 4)/(3 × 4) = 8/12. (1/3 is 4 copies of 1/12, so 2/3 is 8 copies of 1/12.)*
   b. Equivalent fractions correspond to the same point on a number line. *In Grade 5, all numbers lines begin with zero.*
   c. When the numerators of equivalent fractions are divided by their denominators, the resulting quotients are the same.
2. Identify pairs of equivalent fractions; given two fractions with unlike denominators, find two fractions with the same denominator and equivalent to each.
3. Compare and order fractions with like or unlike denominators, e.g., by finding equivalent fractions with the same denominator, and describe the sizes of fractional quantities from a context with reference to the context. *Compare using the fractions themselves, tape diagrams or number line representations, and area models.*

Operations on fractions

4. Understand that sums and differences of fractions with unlike denominators can be computed by replacing each with an equivalent fraction so that the resulting fractions have the same denominator. *For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12.*
5. Compute sums and differences of fractions with like or unlike denominators, and solve word problems involving addition and subtraction of fractions. Estimate fraction sums and differences to assess the reasonableness of results.
6. ❖ Understand that multiplying a fraction by a/b means taking a parts of a decomposition of the fraction into b equal parts. *For example, to multiply 2/3 × 4/5 = 8/15, one may decompose a whole of size 4/5 into 3 equal parts; each part has size 4/15. Two*

of these parts then make 8/15, so 2/3 × 4/5 = 8/15. (In general, a/b × p/q = ap/bq.) This standard includes multiplication of a whole number by a fraction, by writing the whole number as fraction with denominator 1.

7. Understand that the area of a rectangle with side lengths *a/b* and *c/d* is the product *a/b* × *p/q*. This extends the area formula for rectangles to fractional side lengths, and also allows products of fractions to be represented visually as areas of rectangles.
8. ❖Explain and justify the properties of operations with fractions, e.g., by using equations, number line representations, area models, and story contexts.
9. Understand division of unit fractions by whole numbers and division of whole numbers by unit fractions:
   a. Dividing a unit fraction 1/b by a whole number a results in a smaller unit fraction 1/a × b. *For example, 1/3 ÷ 2 = 1/6 because when 1/3 is divided into 2 equal parts, the size of each part is 1/6; a third of a pound of cheese shared between two people will give each person a sixth of a pound. (Using the inverse relationship between multiplication and division: 1/3 ÷ 2 = 1/6 because 1/6 × 2 = 1/3.)*
   b. Dividing a whole number a by a unit fraction 1/b results in a greater whole number a × b. *For example, 2 ÷ 1/3 = 6 because 6 is the number of 1/3s in 2; two pounds of cheese will make six portions of a third of a pound each. (Using the inverse relationship between multiplication and division: 2 ÷ 1/3 = 6 because 6 × 1/3 = 2.)*
10. Calculate products of fractions, and quotients of unit fractions and nonzero whole numbers (with either as divisor), and solve word problems involving these operations. Represent these operations using equations, area models and length models.
11. Understand that a mixed number such as 3 2/5 represents the sum of a whole number and a fraction less than one. Because a whole number can be represented as a fraction (3 = 3/1), and the sum of two fractions is also a fraction, a mixed number also represents a fraction (3 2/5 = 3 + 2/5 = 15/5 + 2/5 = 17/5). Write fractions as equivalent mixed numbers and vice versa.

Measurement and Data 5-MD

Units of measure

1. Understand that quantities expressed in like units can be added or subtracted giving a sum or difference with the same unit; different quantities may be multiplied to obtain a new kind of quantity (e.g., as when two lengths are multiplied to compute an area, or when an area and a length are multiplied to compute a volume).
2. Understand that when measuring a quantity, if a smaller unit is used, more units must be iterated to measure the quantity in those units.
3. Convert among different-sized standard measurement units within a given measurement system (e.g., feet to yards, centimeters to meters) and use conversion in solving multi-step word problems.

Volume

4. Understand concepts of volume measurement:
   a. A cube with side length 1 unit (a unit cube) is said to have "one cubic unit" of volume, and can be used to measure volume.
   b. The volume of a right rectangular prism with whole-unit side lengths can be found by packing it with unit cubes and using multiplication to count their number. *For example, decomposing a right rectangular prism 3 length units wide by 5 units deep by 2 units tall shows that its volume is 3 × 5 × 2 cubic units. The base of the prism has area 3 × 5 square units, so the volume can also be expressed as the height times the area of the base.*
   c. When measuring a volume, if a smaller unit is used, more units must be iterated to measure the volume in those units.
   d. If a solid figure is decomposed into several disjoint pieces, then the volume enclosed by the figure can be found by adding the volumes of the pieces (when these volumes are expressed in the same units).
5. Decompose right rectangular prisms into layers of arrays of cubes; determine and compare volumes of right rectangular prisms, and objects well described as right rectangular prisms, by counting cubic units (using cm^3, m^3, in^3, ft^3, and improvised units).

Representing and interpreting data

6. Make a dot plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in dot plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.*

Geometry 5-G

Coordinates

1. Understand that a pair of perpendicular number lines, called axes, defines a coordinate system.
   a. Their intersection is called the origin, usually arranged to coincide with the 0 on each line.
   b. A given point in the plane can be located by using an ordered pair of numbers, called its coordinates. The first number indicates how far to travel from the origin in the direction of one axis, the second number indicates how far to travel in the direction of the second axis.
   c. To avoid ambiguity, conventions dictate that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).
2. Graph points in the first quadrant of the coordinate plane, and identify the coordinates of graphed points. Where ordered pairs arise in a problem situation, interpret the coordinate values in the context of the situation.

Plane figures

3. Understand that properties belonging to a category of plane figures also belong to all subcategories of that category. *For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.*
4. Classify plane figures in a hierarchy based on properties.

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Mathematics | Grade 6

In Grade 6, instructional time should focus on four critical areas: (1) connecting ratio and rate to whole number multiplication and division; (2) developing understanding of and fluency with division of fractions and developing fluency with multiplication of fractions; (3) developing understanding of and using formulas to determine areas of two-dimensional shapes and distinguishing between volume and surface area of three-dimensional shapes; and (4) writing, interpreting, and using expressions and equations.

(1) Students use reasoning about multiplication and division with quantities to solve ratio and rate problems. By viewing equivalent ratios and rates as deriving from, and extending, pairs of rows (or columns) in the multiplication table, and by analyzing simple drawings that indicate the relative size of quantities, students extend whole number multiplication and division to ratios and rates. Thus students expand their repertoires of problems in which multiplication and division can be used to solve problems, and they build on their understanding of fractions to understand ratios. Students solve a wide variety of problems involving ratios and rates.

(2) Students use the meaning of fractions, the meanings of multiplication and division, and the inverse relationship between multiplication and division to understand and explain why the procedures for dividing fractions make sense. Students are able to add, subtract, multiply, and divide fractions fluently, and use these operations to solve problems, including multi-step problems and problems involving measurement.

(3) Students reason about relationships among shapes to determine area and surface area. They find areas of right triangles, other triangles, and special quadrilaterals by decomposing these shapes, rearranging or removing pieces, and relating the shapes to rectangles. Using these methods, students discuss, develop, and justify formulas for areas of triangles and parallelograms. Students find areas of polygons and surface areas of prisms and pyramids by decomposition into pieces whose area they can determine.

(4) Students write mathematical expressions and equations that correspond to given situations, they evaluate expressions, and they use expressions and formulas to solve problems. Students understand that a variable is a letter standing for a number, where the number is unknown, or where, for the purpose at hand, it can be any number in the domain of interest. Students understand that expressions in different forms can be equivalent, and they use the laws of arithmetic to rewrite expressions to represent a total quantity in a different way (such as to represent it more compactly or to feature different information). Students know that the solutions of an equation are the values of the variables that make the equation true. Students use properties of operations and the idea of maintaining the equality of both sides of an equation to solve simple one-step equations. Students construct and analyze tables, such as tables of quantities that are in equivalent ratios, and they use equations (such as $3x = y$) to describe relationships in a table.

Having represented and analyzed data in Grades K–5, students in Grade 6 begin a serious engagement with statistics. The study of variability in data distinguishes statistics from mathematics. Students beginning their study of variability must first recognize statistical questions as those that anticipate variability in the answers. From this conceptual beginning, they learn to describe and summarize distributions of data—an activity that goes beyond merely computing summary statistics to include assessing the shape of a distribution and considering other issues as described in the standards.

Ratios and Proportional Relationships 6-RP

Ratios

1. Understand the concept of a ratio: Two quantities are said to be in a ratio of a to b when for every a units of the first quantity there are b units of the second. *For example, in a flock of birds, the ratio of wings to beaks might be 2 to 1; this ratio is also written 2:1. In Grade 6, limit to ratios of whole numbers.*
2. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane.
3. Solve for an unknown quantity in a problem involving two equal ratios.
4. Describe categorical data sets using ratios (e.g., for every vote candidate A received, candidate C received nearly three votes; the ratio of type O blood donors to type B blood donors was 9:2).

Unit rates

5. Understand that for a ratio a:b, the corresponding unit rate is a/b. If there are a units of the first quantity for every b units of the second, where $b \neq 0$, then there are a/b units of the first quantity for 1 unit of the second. *For example, if a recipe has a ratio of 3 cups of flour to 4 cups of sugar, then there is 3/4 cup of flour for each cup of sugar.*
6. ❖Solve unit rate problems including unit pricing and constant speed, including reasoning with equations such as $d = r \times t$, $r = d/t$, $t = d \div r$.

The Number System 6-NS

Operations

1. Understand that the properties of operations apply to, and can be used with, addition and multiplication of fractions.
2. Understand that division of fractions is defined by viewing a quotient as the solution for an unknown-factor multiplication problem. *For example, (2/3) ÷ (5/7) = 14/15 because (5/7) × (14/15) = (2/3).*
3. Solve word problems requiring arithmetic with fractions, using the properties of operations and converting between forms as appropriate; estimate to check reasonableness of answers.
4. Fluently divide whole numbers using the standard algorithm.

The system of rational numbers

5. Understand that a number is a point on the number line.
6. Understand that some quantities have opposite directions, such as elevation above and below sea level or money received and spent. These quantities can be described using positive and negative numbers.
7. Understand that number lines familiar from previous grades can be extended to represent negative numbers to the left of zero. *Number lines can also be vertically oriented, as when a coordinate system is formed. Then the conventional terms "to the right of 0" and "to the left of 0" conventionally become "above 0" and "below 0."*
   a. Two different numbers, such as 7 and –7, that are equidistant from zero on a number line are said to be opposites of one another. The opposite of the opposite of a number is the number itself, e.g., –(–3) = 3. The opposite of 0 is 0.
   b. The absolute value of a number q, written $|q|$, is its distance from zero, and is always positive or zero.
   c. Fractions and their opposites form a system of numbers called the rational numbers, represented by points on a number line. Whole numbers and their opposites form the integers, which are contained in the rational numbers.
   d. Previous ways of comparing positive numbers can be extended to the rational numbers. The statement $p > q$ means that p is located to the right of q on a number line, while $p < q$ means that p is located to the left of q on a number line. Comparisons can also be made by reasoning appropriately about signed quantities (e.g, –3 > –7 makes sense because –3°C is a higher temperature than –7°C). The way two numbers compare does not always agree with the way their absolute values compare; for example, –3 > –7, but |–3| < |–7|.
8. Find and position rational numbers, including integers, on a number line.
9. Use rational numbers to describe quantities such as elevation, temperature, account balance and so on. Compare these quantities, recording the results of comparisons using > and < symbols.
10. Graph points and identify coordinates of points on the coordinate plane in all four quadrants. Where ordered pairs arise in a problem situation, interpret the coordinate values in the context of the situation.

Expressions and Equations 6-EE

Expressions

1. Understand that an expression records operations with numbers or with letters standing for numbers. *For example, the expression $2 \cdot (8 + 7)$ records adding 8 and 7 then multiplying by 2; the expression $5 - y$ records subtracting y from 5. Focus on the operations of addition, subtraction, multiplication and division, with some attention to square or cube roots.*
2. Understand the use of variables in expressions and algebraic conventions:
   a. A letter is used to stand for a number in an expression in cases where the number is unknown, or where, for the purpose at hand, it can be any number in a domain of interest. Such a letter is called a variable.
   b. If a variable appears in an expression more than once (e.g., as in $t + 3t$), that variable is understood to refer to the same number in each instance.
   c. The multiplication symbol can be omitted when writing products of two or more variables or of a number and a variable. *For example, the expressions xy and $2a$ indicate $x \times y$ and $2 \times a$, respectively.*
3. Describe the structure and elements of simple expressions using correct terminology (sum, term, product, factor, quotient, coefficient); describe an expression by viewing one or more of its parts as a single entity. *For example, describe the expression $2 \cdot (8 + 7)$ as a product of two factors, by viewing $(8 + 7)$ as a single entity. The second factor is itself a sum of two terms.*
4. Understand and generate equivalent expressions:
   a. Understand that two expressions are equivalent if they name the same number regardless of which numbers the variables in them stand for. *For example, the expressions $x + 3$ and $4x$ are not equivalent, even though they happen to name the same number in the case when x stands for 1.*
   b. Understand that applying the laws of arithmetic to an expression results in an equivalent expression. *For example, applying the distributive law to the expression $3 \cdot (2 + x)$ leads to the equivalent expression $6 + 3x$. Applying the distributive law to $y + y + y$ leads to the equivalent expression $y \times (1 + 1 + 1)$, i.e., $y \times 3$ and then the commutative law of multiplication leads to the equivalent expression $3y$.*
   c. Generate equivalent expressions to reinterpret the meaning of an expression. *For example, $2t + 3t$ records the addition of twice a quantity to three times itself; applying the distributive law leads to the equivalent expression $5t$, so that the original expression can be reinterpreted as recording five times the quantity.*

Quantitative relationships and the algebraic approach to problems

5. Understand that an equation is a statement that two expressions are equal, and a solution to an equation is a replacement value of the variable (or replacement values for all the variables if there is more than one) that makes the equation true.
6. Using the idea of maintaining equality between both sides of the equation, solve equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.
7. Choose variables to represent quantities in a word problem, and construct simple expressions or equations to solve the problem by reasoning about the quantities.
8. Understand that a variable can be used to represent a quantity that can change, often in relationship to another changing quantity, and an equation can express one quantity, thought of as the dependent variable, in terms of other quantities, thought of as the independent variables; represent a relationship between two quantities using equations, graphs, and tables; translate between any two of these representations. *For example, describe the terms in a sequence $t = 3, 6, 9, 12, \ldots$ of multiples of 3 by writing the equation $t = 3n$ for $n = 1, 2, 3, 4, \ldots$.*

Geometry 6-G

Properties of area, surface area, and volume

1. Understand that plane figures can be decomposed, reassembled, and completed into new figures; use this technique to derive area formulas.
2. Find the areas enclosed by right triangles, other triangles, special quadrilaterals, and polygons (by composing into rectangles or decomposing into triangles and other shapes).
3. Understand that three-dimensional figures can be formed by joining rectangles and triangles along their edges to enclose a solid region with no gaps or overlaps. The surface area is the sum of the areas of the enclosing rectangles and triangles.
4. Find the surface area of cubes, prisms and pyramids (include the use of nets to represent these figures).
5. Solve problems involving area, volume and surface area of objects.
6. Give examples of right rectangular prisms with the same surface area and different volumes, and with the same volume and different surface areas.

7. ❖Use exponents and symbols for square roots and cube roots to express the area of a square and volume of a cube in terms of their side lengths, and to express their side lengths in terms of their area or volume.

Statistics and Probability 6-SP

Variability and measures of center

1. Understand that a statistical question is one that anticipates variability in the data related to the question and accounts for it in the answers. *For example, "How old am I?" is not a statistical question , but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.*
2. Understand that a set of data generated by answers to a statistical question typically shows variability—not all of the values are the same—and yet often the values show an overall pattern, often with a tendency to cluster.
   a. A measure of center for a numerical data set summarizes all of its values using a single number. The median is a measure of center in the sense that approximately half the data values are less than the median, while approximately half are greater. The mean is a measure of center in the sense that it is the value that each data point would take on if the total of the data values were redistributed fairly, and in the sense that it is the balance point of a data distribution shown on a dot plot.
   b. A measure of variation for a numerical data set describes how its values vary using a single number. The interquartile range and the mean absolute deviation are both measures of variation.

Summarizing and describing distributions

3. Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
4. Summarize numerical data sets, such as by:
   a. Reporting the number of observations.
   b. Describing the nature of the variable, including how it was measured and its units of measurement. *Data sets can include fractional values at this grade but not negative values.*
   c. Describing center and variation, as well as describing any overall pattern and any striking deviations from the overall pattern.
5. Relate the choice of the median or mean as a measure of center to the shape of the data distribution being described and the context in which it is being used. Do the same for the choice of interquartile range or mean average deviation as a measure of variation. *For example, why are housing prices often summarized by reporting the median selling price, while students' assigned grades are often based on mean homework scores?*

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Mathematics | Grade 7

In Grade 7, instructional time should focus on four critical areas: (1) developing understanding of and applying proportional relationships; (2) developing understanding of operations with rational numbers and solving linear equations; (3) analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence; and (4) drawing inferences about populations based on samples.

(1) Students extend their understanding of ratios and develop understanding of proportionality to solve single- and multi-step problems. Students use their understanding of ratios and proportionality to solve a wide variety of percent problems, including those involving discounts, interest, taxes, tips, and percent increase or decrease. Students solve problems about similar objects (including geometric figures) by using scale factors that relate corresponding lengths between the objects or by using the fact that relationships of lengths within an object are preserved in similar objects. Students graph proportional relationships and understand the unit rate informally as a measure of the steepness of the related line, called the slope. They distinguish proportional relationships from other relationships.

(2) Students develop a unified understanding of number, recognizing fractions, decimals, and percents as different representations of rational numbers. Students extend addition, subtraction, multiplication, and division and their properties to all rational numbers, including integers and numbers represented by complex fractions and negative fractions. By applying the laws of arithmetic, and by viewing negative numbers in terms of everyday contexts (e.g., amounts owed or temperatures below zero), students explain why the rules for adding, subtracting, multiplying, and dividing with negative numbers make sense. They use the arithmetic of rational numbers as they formulate and solve linear equations in one variable and use these equations to solve problems.

(3) Students use ideas about distance and angles, how they behave under dilations, translations, rotations and reflections, and ideas about congruence and similarity to describe and analyze figures and situations in two- and three-dimensional space and to solve problems, including multi-step problems. Students prove that various configurations of lines give rise to similar triangles because of the angles created when a transversal cuts parallel lines. Students apply this reasoning about similar triangles to solve problems, such as finding heights and distances. Students see the plausibility of the formulas for the circumference and area of a circle. For example, in the case of area, they may do so by reasoning about how lengths and areas scale in similar figures or by decomposing a circle or circular region and rearranging the pieces.

(4) Students build on their previous work with single data distributions to compare two data distributions and address questions about differences between populations. They begin informal work with random sampling to generate data sets and learn about the importance of representative samples for drawing inferences.

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Ratios and Proportional Relationships 7-RP

Analyzing proportional relationships

1. Form ratios of nonnegative rational numbers and compute corresponding unit rates. *For example, a person might walk ½ mile in each ¼ hour; the unit rate for this ratio is (1/2)/(1/4) miles per hour, equivalently 2 miles per hour. Include ratios of lengths, areas and other quantities, including when quantities being compared are measured in different units.*
2. Recognize situations in which two quantities covary and have a constant ratio. (The quantities are then said to be in a proportional relationship and the unit rate is called the constant of proportionality.) Decide whether two quantities that covary are in a proportional relationship, e.g., by testing for equivalent ratios or graphing on a coordinate plane.
3. Compute unit rates and solve proportional relationship problems in everyday contexts, such as shopping, cooking, carpentry, party planning, etc. Represent proportional relationships by equations that express how the quantities are related via the constant of proportionality or unit rate. *For example, total cost, t, is proportional to the number, n, purchased at a constant price, p; this relationship can be expressed as $t = pn$.*
4. Plot proportional relationships on a coordinate plane where each axis represents one of the two quantities involved, observe that the graph is a straight line through the origin, and find unit rates from a graph. Explain what a point (x, y) means in terms of the situation, with special attention to the points (0, 0) and $(1, r)$ where r is the unit rate.
5. Compare tables, graphs, formulas, diagrams, and verbal descriptions that represent or partially represent proportional relationships; explain correspondences among the representations including how the unit rate is shown in each.

Percent

6. Understand that percentages are rates per 100. For example, 30% of a quantity means $^{30}/_{100}$ times the quantity. A percentage can be a complex fraction, as in $3.75\% = {}^{3.75}/_{100}$.
7. Find a percentage of a quantity; solve problems involving finding the whole given a part and the percentage.
8. Solve multistep percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error, expressing monthly rent as a percentage of take-home pay.*

The Number System 7-NS

The system of rational numbers

1. Understand that the rules for manipulating fractions extend to complex fractions.
2. Understand and perform addition and subtraction with rational numbers:
   a. Understand that on a number line, the sum $p + q$ is the number located a distance $|q|$ from p, to the right of p if q is positive and to the left of p if q is negative. A number and its opposite are additive inverses (i.e., their sum is zero).
   b. Compute sums of signed numbers using the laws of arithmetic. *For example, $7 + (-3) = 4$ because $7 + (-3) = (4 + 3) + (-3) = 4 + [3 + (-3)] = 4 + [0] = 4$.*
   c. Understand that subtraction of rational numbers is defined by viewing a difference as the solution of an unknown-addend addition problem. Subtraction of a rational number gives the same answer as adding its additive inverse.
   d. Explain and justify rules for adding and subtracting rational numbers, using a number line and practical contexts. *For example, relate $r + (-s) = r - s$ to a bank transaction; explain why $p - (q + r) = p - q - r$.*
   e. Understand that the additive inverse of a sum is the sum of the additive inverses, that is $-(p + q) = -p + -q$. *For example, $-(6 + -2) = (-6) + 2$ because $[6 + (-2)] + [(-6) + 2] = [6 + (-6)] + [(-2) + 2] = [0] + [0] = 0$.*
3. Understand and perform multiplication and division with rational numbers:
   a. Understand that the extension of multiplication from fractions to rational numbers is determined by the requirement that multiplication and addition satisfy the laws of arithmetic, particularly the distributive law, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers.
   b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p/q is a rational number, then $-(p/q) = (-p)/q = p/(-q)$.
   c. Calculate products and quotients of rational numbers, and use multiplication and division to solve word problems. *Include signed quantities.*

The system of real numbers

4. Understand that there are numbers that are not rational numbers, called irrational numbers, e.g., π and $\sqrt{2}$. Together the rational and irrational numbers form the real number system. In school mathematics, the real numbers are assumed to satisfy the laws of arithmetic.

Expressions and Equations 7-EE

Expressions

1. Interpret numerical expressions at a level necessary to calculate their value using a calculator or spreadsheet. For expressions with variables, use and interpret conventions of algebraic notation, such as $y/2$ is $y \div 2$ or $1/2 \times y$; $(3 \pm y)/5$ is $(3 \pm y) \div 5$ or $1/5 \times (3 \pm y)$; a^2 is $a \times a$, a^3 is $a \times a \times a$, a^2b is $a \times a \times b$.
2. Generate equivalent expressions from a given expression using the laws of arithmetic and conventions of algebraic notation. Include:
   a. Adding and subtracting linear expressions, as in $(2x + 3) + x + (2 - x) = 2x + 5$.
   b. Factoring, as in $4x + 4y = 4(x + y)$ or $5x + 7x + 10y + 14y = 12x + 24y = 12(x + 2y)$.
   c. Simplifying, as in $-2(3x - 5) + 4x = 10 - 2x$ or $x/3 + (x - 2)/4 = 7x/12 - 1/2$.

Quantitative relationships and the algebraic approach to problems

3. Choose variables to represent quantities in a word problem, and construct simple equations to solve the problem by reasoning about the quantities.
   a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are nonnegative rational numbers and the solution is a nonnegative rational number. Fluently solve equations of these forms, e.g., by undoing the operations involved in producing the expression on the left.
   b. Solve the same word problem arithmetically and algebraically. *For example, "J. has 4 packages of balloons and 5 single balloons. In all, he has 21 balloons. How many balloons are in a package?" Solve this problem arithmetically (using a sequence of operations on the given numbers), and also solve it by using a variable to stand for the number of balloons in a package, constructing an equation such as $4b + 5 = 21$ to describe the situation then solving the equation.*
   c. Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example, $P + 0.05P = 1.05P$ means that "increase by 5%" is the same as "multiply by 1.05."*

Geometry 7-G

Congruence and similarity

1. Verify experimentally the fact that a rigid motion (a sequence of rotations, reflections, and translations) preserves distance and angle, e.g., by using physical models, transparencies, or dynamic geometry software:
   a. Lines are taken to lines, and line segments to line segments of the same length.
   b. Angles are taken to angles of the same measure.
   c. Parallel lines are taken to parallel lines.
2. Understand the meaning of congruence: a plane figure is congruent to another if the second can be obtained from the first by a rigid motion.
3. Verify experimentally that a dilation with scale factor k preserves lines and angle measure, but takes a line segment of length L to a line segment of length kL.
4. Understand the meaning of similarity: a plane figure is similar to another if the second can be obtained from the first by a similarity transformation (a rigid motion followed by a dilation).
5. Solve problems involving similar figures and scale drawings. *Include computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.*
6. Use informal arguments involving approximation by lines, squares, and cubes to see that a similarity transformation with a scale factor of k leaves angle measures unchanged, changes lengths by a factor of k, changes areas by a factor of k^2, and changes volumes by a factor of k^3.
7. Know the formulas relating the area, radius and circumference of a circle and solve problems requiring the use of these formulas; give an informal derivation of the relationship between the circumference and area of a circle.

Angles

8. Justify facts about the angle sum of triangles, exterior angles, and alternate interior angles created when parallel lines are cut by a transversal, e.g., by using physical models, transparencies, or dynamic geometry software to make rigid motions and give informal arguments. *For example, arrange three copies of the same triangle so that the three angles appear to form a line, and give an argument in terms of transversals why this is so.*
9. Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.

Situations involving randomness

1. Simulate situations involving randomness using random numbers generated by a calculator or a spreadsheet or taken from a table. *For example, if you guess at all ten true/false questions on a quiz, how likely are you to get at least seven answers correct?*
2. Use proportional reasoning to predict relative frequencies of outcomes for situations involving randomness, but for which a theoretical answer can be determined. For *example, when rolling a number cube 600 times, one would predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times. How far off might your prediction be? Use technology to generate multiple samples to approximate a distribution of sample proportions. Repeat the process for smaller sample sizes.*

Random sampling to draw inferences about a population

3. Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.
4. Understand the importance of measures of variation in sample quantities (like means or proportions) in reasoning about how well a sample quantity estimates or predicts the corresponding population quantity.
5. Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. *For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.*

Comparative inferences about two populations

6. Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. *For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean average deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.*
7. Use measures of center and measures of variability for numerical data from uniform random samples to draw informal comparative inferences about two populations. *For example, decide whether the words in a chapter of a seventh-grade book are generally longer than the words in a chapter of a sixth-grade book.*

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Mathematics | Grade 8

In Grade 8, instructional time should focus on three critical areas: (1) solving linear equations and systems of linear equations; (2) grasping the concept of a function and using functions to describe quantitative relationships; (3) understanding and applying the Pythagorean Theorem.

(1) Students use linear equations, and systems of linear equations to represent, analyze, and solve a variety of problems. Students recognize proportions ($y/x = m$ or $y = mx$) as a special case of linear equations, $y = mx + b$, understanding that the constant of proportionality (m) is the slope and the graphs are lines through the origin. They understand that the slope (m) of a line is a constant rate of change, so that if the input or x-coordinate changes by an amount A, the output or y-coordinate changes by the amount mA. Students also formulate and solve linear equations in one variable and use these equations to solve problems. Students also use a linear equation to describe the association between two quantities in a data set (such as arm span vs. height for students in a classroom). At this grade, fitting the model, and assessing its fit to the data are done informally. Interpreting the model in the context of the data requires students to express a relationship between the two quantities in question.

Students strategically choose and efficiently implement procedures to solve linear equations in one variable, understanding that when they use the properties of equality and the concept of logical equivalence, they maintain the solutions of the original equation. Students solve systems of two linear equations in two variables and relate the systems to pairs of lines in the plane; these intersect, are parallel, or are the same line. Students use linear equations, systems of linear equations, linear functions, and their understanding of slope of a line to analyze situations and solve problems.

(2) Students grasp the concept of a function as a rule that assigns to each element of its domain exactly one element of its range. They use function notation and understand that functions describe situations where one quantity determines another. They can translate among verbal, tabular, graphical, and algebraic representations of functions (noting that tabular and graphical representations are usually only partial representations), and they describe how aspects of the function are reflected in the different representations.

(3) Students understand the statement of the Pythagorean Theorem and its converse, and can explain why the Pythagorean Theorem is valid, for example, by decomposing a square in two different ways. They apply the Pythagorean Theorem to find distances between points on the coordinate plane, to find lengths, and to analyze polygons.

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The Number System 8-NS

The system of real numbers

1. Understand informally that every number on a number line has a decimal expansion, which can be found for rational numbers using long division. Rational numbers are those with repeating decimal expansions (this includes finite decimals which have an expansion that ends in a sequence of zeros).
2. Informally explain why $\sqrt{2}$ is irrational.
3. Use rational approximations (including those obtained from truncating decimal expansions) to compare the size of irrational numbers, locate them approximately on a number line, and estimate the value of expressions (e.g., π^2). *For example, show that the square root of 2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.*

Expressions and Equations 8-EE

Linear equations in one variable

1. Understand that a linear equation in one variable might have one solution, infinitely many solutions, or no solutions. Which of these possibilities is the case can be determined by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).
2. Solve linear equations with rational number coefficients, including equations that require expanding expressions using the distributive law and collecting like terms.

Linear equations in two variables

3. Understand that the slope of a non-vertical line in the coordinate plane has the same value for any two distinct points used to compute it. This can be seen using similar triangles.
4. Understand that two lines with well-defined slopes are parallel if and only if their slopes are equal.
5. Understand that the graph of a linear equation in two variables is a line, the set of pairs of numbers satisfying the equation. If the equation is in the form $y = mx + b$, the graph can be obtained by shifting the graph of $y = mx$ by b units (upwards if b is positive, downwards if b is negative). The slope of the line is m.
6. Understand that a proportional relationship between two variable quantities y and x can be represented by the equation $y = mx$. The constant m is the unit rate, and tells how much of y per unit of x.
7. Graph proportional relationships and relationships defined by a linear equation; find the slope and interpret the slope in context.
8. Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.*

Systems of linear equations

9. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.
10. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. *For example, $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because the quantity $3x + 2y$ cannot simultaneously be 5 and 6.*
11. Solve and explain word problems leading to two linear equations in two variables.
12. Solve problems involving lines and their equations. *For example, decide whether a point with given coordinates lies on the line with a given equation; construct an equation for a line given two points on the line or one point and the slope; given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.*

Functions 8-F

Function concepts

1. Understand that a function from one set (called the domain) to another set (called the range) is a rule that assigns to each element of the domain (an input) exactly one element of the range (the corresponding output). The graph of a function is the set of ordered pairs consisting of an input and the corresponding output. *Function notation is not required in Grade 8.*
2. Evaluate expressions that define functions, and solve equations to find the input(s) that correspond to a given output.
3. Compare properties of two functions represented in different ways (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.*

4. Understand that a function is linear if it can be expressed in the form $y = mx + b$ or if its graph is a straight line. *For example, the function $y = x^2$ is not a linear function because its graph contains the points (1,1), (–1,1) and (0,0), which are not on a straight line.*

Functional relationships between quantities

5. Understand that functions can describe situations where one quantity determines another.
6. Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship; from two (x, y) values, including reading these from a table; or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.
7. Describe qualitatively the functional relationship between two quantities by reading a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

Geometry 8-G

Congruence and similarity

1. Use coordinate grids to transform figures and to predict the effect of dilations, translations, rotations and reflections.
2. Explain using rigid motions the meaning of congruence for triangles as the equality of all pair of sides and all pairs of angles.
3. Give an informal explanation using rigid motions of the SAS and ASA criteria for triangle congruence, and use them to prove simple theorems.
4. Explain using similarity transformations the meaning of similarity for triangles as the equality of all pairs of angles and the proportionality of all pairs of sides.
5. Give an informal explanation using similarity transformations of the AA and SAS criteria for triangle similarity, and use them to prove simple theorems.

The Pythagorean Theorem

6. The side lengths of a right triangle are related by the Pythagorean Theorem. Conversely, if the side lengths of a triangle satisfy the Pythagorean Theorem, it is a right triangle.
7. Explain a proof of the Pythagorean Theorem and its converse.
8. Use the Pythagorean Theorem to determine unknown side lengths in right triangles and to solve problems in two and three dimensions.
9. Use the Pythagorean Theorem to find the distance between two points in a coordinate system.

Plane and solid geometry

10. Draw (freehand, with ruler and protractor, and with technology) geometric shapes from given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the triangle is uniquely defined, ambiguously defined or nonexistent.
11. Understand that slicing a three-dimensional figure with a plane produces a two-dimensional figure. Describe plane sections of right rectangular prisms and right rectangular pyramids.
12. Use hands-on activities to demonstrate and describe properties of: parallel lines in space, the line perpendicular to a given line through a given point, lines perpendicular to a given plane, lines parallel to a given plane, the plane or planes passing through three given points, and the plane perpendicular to a given line at a given point.

Statistics and Probability 8-SP

Patterns of association in bivariate data

1. Understand that scatter plots for bivariate measurement data may reveal patterns of association between two quantities.
2. Construct and interpret scatter plots for bivariate measurement data. Describe patterns such as clustering, outliers, positive or negative association, linear association, nonlinear association.
3. Understand that a straight line is a widely used model for exploring relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.
4. Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. *For example, in a linear model for a biology experiment, an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.*
5. Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables

collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*

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Mathematics | High School—Number and Quantity

Numbers and Number Systems. During the years from kindergarten to eighth grade, students must repeatedly extend their conception of number. At first, "number" means "counting number": 1, 2, 3, … Soon after that, 0 is used to represent "none" and the whole numbers are formed by the counting numbers together with zero. The next extension is fractions. At first, fractions are barely numbers and tied strongly to pictorial representations. Yet by the time students understand division of fractions, they have a strong concept of fractions as numbers and have connected them, via their decimal representations, with the base-ten system used to represent the whole numbers. During middle school, fractions are augmented by negative fractions to form the rational numbers. In Grade 7, students extend this system once more, augmenting the rational numbers with the irrational numbers to form the real numbers. In high school, students will be exposed to yet another extension of number, when the real numbers are augmented by the imaginary numbers to form the complex numbers.

Students sometimes have difficulty accepting new kinds of numbers when these differ in appearance and properties from those of a familiar system. For example, students might decide that complex numbers are not numbers because they are not written with numerical digits, or because they do not describe positive or negative quantities. Indeed, this ascent through number systems makes it fair to ask: what does the word *number* mean that it can mean all of these things? One possible answer is that a number is something that can be used to do mathematics: calculate, solve equations, or represent measurements. Historically, number systems have been extended when there is an intellectual or practical benefit in using the new numbers to solve previously insoluble problems.[1]

Although the referent of "number" changes, the four operations stay the same in important ways. The commutative, associative, and distributive laws extend the properties of operations to the integers, rational numbers, real numbers, and complex numbers. The inverse relationships between addition and subtraction, and multiplication and division are maintained in these larger systems.

Calculators are useful in this strand to generate data for numerical experiments, to help understand the workings of matrix, vector, and complex number algebra, and to experiment with non-integer exponents.

Quantities. In their work in measurement up through Grade 8, students primarily measure commonly used attributes such as length, area, volume, and so forth. In high school, students encounter novel situations in which they themselves must conceive the attributes of interest. Such a conceptual process might be called quantification. Quantification is important for science, as when surface area suddenly "stands out" as an important variable in evaporation. Quantification is also important for companies, who must conceptualize relevant attributes and create or choose suitable metrics by which to measure them.

Content Outline

The Real Number System

Quantities

The Complex Number System

Vector Quantities and Matrices

[1] See Harel, G., "A Standpoint of Research on Middle/Higher Number and Quantity," a research review provided for the Common Core State Standards Initiative.

The Real Number System N-RN

1. Understand that the laws of exponents for positive integer exponents follow from an understanding of exponents as indicating repeated multiplication, and from the associative law for multiplication.
2. Understand that the definition of the meaning of zero, positive rational, and negative exponents follows from extending the laws of exponents to those values, allowing for a notation for radicals in terms of rational exponents. *For example, since* $(5^{1/3})^3 = 5^{(1/3)\cdot 3} = 5^1 = 5$, $5^{1/3}$ *is a cube root of* 5.
3. Understand that sums and products of rational numbers are rational.
4. Understand that the sum of a rational number and an irrational number is irrational, and that the product of a nonzero rational number and an irrational number is irrational.
5. Rewrite expressions using the laws of exponents. *For example,* $(5^{1/2})^3 = 5^{3/2}$ *and* $1/5 = 5^{-1}$.

Quantities★ N-Q

1. Understand that the magnitude of a quantity is independent of the unit used to measure it. *For example, the density of a liquid does not change when it is measured in another unit. Rather, its measure changes. The chosen unit "measures" the quantity by giving it a numerical value ("the density of lead is 11.3 times that of water").*
2. Use units as a way to understand problems and to guide the solution of multi-step problems, involving, e.g., acceleration, currency conversions, derived quantities such as person-hours and heating degree days, social science rates such as per-capita income, and rates in everyday life such as points scored per game.
3. Define metrics for the purpose of descriptive modeling. *For example, find a good measure of overall highway safety; propose and debate measures such as fatalities per year, fatalities per year per driver, or fatalities per vehicle-mile traveled.*
4. Add, subtract, multiply, and divide numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.
5. Use and interpret quantities and units correctly in algebraic formulas.
6. Use and interpret quantities and units correctly in graphs and data displays (function graphs, data tables, scatter plots, and other visual displays of quantitative information). Generate graphs and data displays using technology.

The Complex Number System N-CN

1. Understand that the relation $i^2 = -1$ and the commutative, associative, and distributive laws can be used to calculate with complex numbers.
2. STEM Understand that polynomials can be factored over the complex numbers, e.g., as in $x^2 + 4 = (x + 2i)(x - 2i)$.
3. STEM Understand that complex numbers can be visualized on the complex plane. Real numbers correspond to points on the horizontal (real) axis, and imaginary numbers to points on the vertical axis.
4. STEM Understand that on the complex plane, arithmetic of complex numbers can be interpreted geometrically: addition is analogous to vector addition, and multiplication can be understood as rotation and dilation about the origin. Complex conjugation is reflection across the real axis.
5. STEM Understand that on the complex plane, as on the real line, the distance between numbers is the absolute value of the difference, and the midpoint of a segment is the average of the numbers at its endpoints.
6. Add, subtract, and multiply complex numbers.
7. STEM Find the conjugate of a complex number; use conjugates to find absolute values and quotients of complex numbers.
8. STEM Solve quadratic equations with real coefficients that have complex solutions using a variety of methods.
9. STEM Graph complex numbers in rectangular form.
10. STEM Graph complex numbers in polar form and interpret arithmetic operations on complex numbers geometrically.
11. STEM Explain why the rectangular and polar forms of a complex number represent the same number.

★ Standard with close connection to modeling.

1. STEM Understand that vector quantities have both magnitude and direction. Vector quantities are typically represented by directed line segments. The magnitude of a vector **v** is commonly denoted $|\mathbf{v}|$ or $||\mathbf{v}||$.
2. STEM Understand that vectors are determined by the coordinates of their initial and terminal points, or by their components.
3. STEM Understand that vectors can be added end-to-end, component-wise, or by the parallelogram rule. The magnitude of a sum of two vectors is typically not the sum of the magnitudes.
4. STEM Understand that a vector **v** can be multiplied by a real number c (called a scalar in this context) to form a new vector $c\mathbf{v}$ with magnitude $|c|v$. When $|c|v \neq 0$, the direction of $c\mathbf{v}$ is either along **v** (for $c > 0$) or against **v** (for $c < 0$). Scalar multiplication can be shown graphically by scaling vectors and possibly reflecting them in the origin; scalar multiplication can also be performed component-wise, e.g., as $c(v_x, v_y) = (cv_x, cv_y)$.
5. STEM Understand that vector subtraction $\mathbf{v} - \mathbf{w}$ is defined as $\mathbf{v} + (-\mathbf{w})$. Two vectors can be subtracted graphically by connecting the tips in the appropriate order.
6. STEM Understand that matrices can be multiplied by scalars to produce new matrices, e.g., as when all of the payoffs in a game are doubled. Matrices of the same dimensions can be added or subtracted. Matrices with compatible dimensions can be multiplied. Unlike multiplication of numbers, matrix multiplication is not a commutative operation, but still satisfies the associative and distributive laws.
7. STEM Understand that a vector, when regarded as a matrix with one column, can be multiplied by a matrix of suitable dimensions to produce another vector. A 2×2 matrix can be viewed as a transformation of the plane.
8. STEM Understand that a system of linear equations can be represented as a single matrix equation in a vector variable.
9. STEM Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse.
10. STEM Perform basic vector operations (addition, subtraction, scalar multiplication) both graphically and algebraically.
11. STEM Given two vectors in magnitude and direction form, determine the magnitude and direction of their sum.
12. STEM Solve problems involving velocity and quantities that can be represented by vectors.★
13. STEM Add, subtract, and multiply matrices of appropriate dimensions.
14. STEM Use matrices to store and manipulate data, e.g., to represent payoffs or incidence relationships in a network.
15. STEM Represent systems of linear equations as matrix equations.
16. STEM Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension greater than 3×3).

★ Standard with close connection to modeling.

Expressions. An expression is a description of a computation on numbers and symbols that represent numbers, using arithmetic operations and the operation of raising a number to rational exponents. Conventions about the use of parentheses and the order of operations assure that each expression is unambiguous. Creating an expression that describes a computation involving a general quantity requires the ability to express the computation in general terms, abstracting from specific instances.

Reading an expression with comprehension involves analysis of its underlying structure. This may suggest a different but equivalent way of writing the expression that exhibits some different aspect of its meaning. For example, $p + 0.05p$ can be interpreted as the addition of a 5% tax to a price p. Rewriting $p + 0.05p$ as $1.05p$ shows that adding a tax is the same as multiplying the price by a constant factor.

Algebraic manipulations are governed by deductions from the commutative, associative, and distributive laws and the inverse relationships between the four operations, and the conventions of algebraic notation. These extend what students have learned about arithmetic expressions in K–8 to expressions that involve exponents, radicals, and representations of real numbers, and, for STEM-intending students, complex numbers.

At times, an expression is the result of applying operations to simpler expressions. Viewing such an expression by singling out these simpler expressions can sometimes clarify its underlying structure.

A spreadsheet or a CAS environment can be used to experiment with algebraic expressions, perform complex algebraic manipulations,and understand how algebraic manipulations behave.

Equations and inequalities. An equation is a statement that two expressions are equal. Solutions to an equation are numbers that make the equation true when assigned to the variables in it. If the equation is true for all numbers, then it is called an identity; identities are often discovered by using the laws of arithmetic or the laws of exponents to transform one expression into another.

The solutions of an equation in one variable form a set of numbers; the solutions of an equation in two variables form a set of ordered pairs of numbers, which can be graphed in the coordinate plane. Two or more equations and/or inequalities form a system. A solution for such a system must satisfy every equation and inequality in the system.

An equation can often be solved by successively transforming it into one or more simpler equations. The process is governed by deductions based on the properties of equality. For example, one can add the same constant to both sides without changing the solutions, but squaring both sides might lead to extraneous solutions. Strategic competence in solving includes looking ahead for productive manipulations and anticipating the nature and number of solutions.

Some equations have no solutions in a given number system, stimulating the extension of that system. For example, the solution of $x + 1 = 0$ is an integer, not a whole number; the solution of $2x + 1 = 0$ is a rational number, not an integer; the solutions of $x^2 - 2 = 0$ are real numbers, not rational numbers; and the solutions of $x^2 + 2 = 0$ are complex numbers, not real numbers.

The same solution techniques used to solve equations can be used to rearrange formulas. For example, the formula for the area of a trapezoid, $A = ((b_1+b_2)/2)h$, can be solved for h using the same deductive process.

Inequalities can be solved by reasoning about the properties of inequality. Many, but not all, of the properties of equality continue to hold for inequalities and can be useful in solving them.

Connections to Functions and Modeling. Expressions can define functions, and equivalent expressions define the same function. Equations in two variables may also define functions. Asking when two functions have the same value leads to an equation; graphing the two functions allows for the approximate solution of the equation. Converting a verbal description to an equation, inequality, or system of these is an essential skill in modeling.

Content Outline

Seeing Structure in Expressions

Arithmetic with Polynomials and Rational Expressions

Creating Equations that Describe Numbers or Relationships

Reasoning with Equations and Inequalities

Seeing Structure in Expressions A-SSE

1. Understand that different forms of an expression may reveal different properties of the quantity in question; a purpose in transforming expressions is to find those properties. *Examples: factoring a quadratic expression reveals the zeros of the function it defines, and putting the expression in vertex form reveals its maximum or minimum value; the expression* 1.15^t *can be rewritten as* $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ *to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*
2. Understand that complicated expressions can be interpreted by viewing one or more of their parts as single entities.
3. Interpret an expression that represents a quantity in terms of the context. *Include interpreting parts of an expression, such as terms, factors and coefficients.*★
4. Factor, expand, and complete the square in quadratic expressions.
5. See expressions in different ways that suggest ways of transforming them. *For example, see* $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, *thus recognizing it as a difference of squares that can be factored as* $(x^2 - y^2)(x^2 + y^2)$.
6. Rewrite expressions using the laws of exponents. *For example,* $(x^{1/2})^3 = x^{3/2}$ *and* $1/x = x^{-1}$.
7. Use the laws of exponents to interpret expressions for exponential functions, recognizing positive rational exponents as indicating roots of the base and negative exponents as indicating the reciprocal of a power. *For example, identify the per unit percentage change in functions such as* $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)^{12t}$, $y = (1.2)^{t/10}$, *and conclude whether it represents exponential growth or decay. Recognize that any nonzero number raised to the zero power is 1, for example,* $12(1.05)^0 = 12$. *Avoid common errors such as confusing* $6(1.05)^t$ *with* $(6 \cdot 1.05)^t$ *and* $5(0.03)^t$ *with* $5(1.03)^t$.
8. STEM Prove the formula for the sum of a geometric series, and use the formula to solve problems.

Arithmetic with Polynomials and Rational Expressions A-APR

1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication.
2. Understand that polynomial identities become true statements no matter which real numbers are substituted. *For example, the polynomial identity* $(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2$ *can be used to generate Pythagorean triples.*
3. Understand the Remainder Theorem: For a polynomial $p(x)$ and a number a, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$.
4. STEM Understand that the Binomial Theorem gives the expansion of $(x + a)^n$ in powers of x for a positive integer n and a real number a, with coefficients determined for example by Pascal's Triangle. The Binomial Theorem can be proved by mathematical induction or by a combinatorial argument.
5. STEM Understand that rational expressions are quotients of polynomials. They form a system analogous to the rational numbers, closed under division by a nonzero rational function.
6. Add, subtract and multiply polynomials.
7. Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the polynomial.
8. Transform simple rational expressions using the commutative, associative, and distributive laws, and the inverse relationship between multiplication and division.
9. Divide a polynomial $p(x)$ by a divisor of the form $x - a$ using long division.
10. STEM Identify zeros and asymptotes of rational functions, when suitable factorizations are available, and use the zeros and asymptotes to construct a rough graph of the function.
11. STEM Divide polynomials, using long division for linear divisors and long division or a computer algebra system for higher degree divisors.

Creating Equations That Describe Numbers or Relationships A-CED*

1. Understand that equations in one variable are often created to describe properties of a specific but unknown number.
2. Understand that equations in two or more variables that represent a relationship between quantities can be built by experimenting with specific numbers in the relationship.
3. Write equations and inequalities that specify an unknown quantity or to express a relationship between two or more quantities. Use the equations and inequalities to solve problems. *Include equations arising from linear and quadratic functions, and simple rational and exponential functions.*

★ Standard with close connection to modeling.

4. Rearrange formulas to highlight a quantity of interest. *For example, transform Ohm's law $V = IR$ to highlight resistance R; in motion with constant acceleration, transform $v_{f,x}^2 - v_{i,x}^2 = 2a_x(x_f - x_i)$ to highlight the change in position along the x-axis, $x_f - x_i$.*

Reasoning with Equations and Inequalities A-REI

1. Understand that to solve an equation algebraically, one makes logical deductions from the equality asserted by the equation, often in steps that replace it with a simpler equation whose solutions include the solutions of the original one.
2. Understand that the method of completing the square can transform any quadratic equation in x into an equivalent equation of the form $(x - p)^2 = q$. This leads to the quadratic formula.
3. Understand that given a system of two linear equations in two variables, adding a multiple of one equation to another produces a system with the same solutions. This principle, combined with principles already encountered with equations in one variable, allows for the simplification of systems.
4. Understand that the graph of an equation in two variables is the set of its solutions plotted in the coordinate plane, often forming a curve or a line.
5. Understand that solutions to two equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.
6. Understand that the solutions to a linear inequality in two variables can be graphed as a half-plane (excluding the boundary in the case of a strict inequality).
7. Understand that solutions to several linear inequalities in two variables correspond to points in the intersection of the regions in the plane defined by the solutions to the inequalities.
8. Understand that equations and inequalities can be viewed as constraints in a problem situation, e.g., inequalities describing nutritional and cost constraints on combinations of different foods.★
9. STEM Understand that the relationship between an invertible function f and its inverse function can be used to solve equations of the form $f(x) = c$.
10. Solve simple rational and radical equations in one variable, noting and explaining extraneous solutions.
11. Solve linear equations in one variable, including equations with coefficients represented by letters.
12. Solve quadratic equations in one variable. *Include methods such as inspection (e.g. for $x^2 = 49$), square roots, completing the square, the quadratic formula and factoring. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b.*
13. Solve equations $f(x) = g(x)$ approximately by finding the intersections of the graphs of $f(x)$ and $g(x)$, e.g. using technology to graph the functions. *Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, exponential, and logarithmic functions.*
14. Solve linear inequalities in one variable and graph the solution set on a number line.
15. Solve systems of linear equations algebraically and graphically, focusing on pairs of linear equations in two variables.
16. Solve algebraically a simple system consisting of one linear equation and one quadratic equation in two variables; for example, find points of intersection between the line $y = -3x$ and the circle $x^2 + y^2 = 3$.
17. Graph the solution set of a system of linear inequalities in two variables.
18. In modeling situations, represent constraints by systems of equations and/or inequalities, and interpret solutions of these systems as viable or non-viable options in the modeling context.★
19. In the context of exponential models, solve equations of the form $a\,b^{ct} = d$ where a, c, and d are specific numbers and the base b is 2, 10, or e.★
20. STEM Relate the properties of logarithms to the laws of exponents and solve equations involving exponential functions.
21. STEM Use inverse functions to solve equations of the form $a\sin(bx + c) = d$, $a\cos(bx + c) = d$, and $a\tan(bx + c) = d$.

★ Standard with close connection to modeling.

Mathematics | High School—Functions

Functions describe situations where one quantity determines another. For example, the return on $10,000 invested at an annualized percentage rate of 4.25% is a function of the length of time the money is invested. Because nature and society are full of dependencies between quantities, functions are important tools in the construction of mathematical models.

In school mathematics, functions usually have numerical inputs and outputs and are often defined by an algebraic expression. For example, the time in hours it takes for a car to drive 100 miles is a function of the car's speed in miles per hour, v; the rule $T(v) = 100/v$ expresses this relationship algebraically and defines a function whose name is T.

The set of inputs to a function is called its domain. We often infer the domain to be all inputs for which the expression defining a function has a value, or for which the function makes sense in a given context.

A function can be described in various ways, such as by a graph (e.g., the trace of a seismograph); by a verbal rule, as in, "I'll give you a state, you give me the capital city"; or by an algebraic expression like $f(x) = a + bx$. The graph of a function is often a useful way of visualizing the relationship the function models, and manipulating a mathematical expression for a function can throw light on the function's properties. Graphing technology and spreadsheets are also useful tools in the study of functions.

Functions presented as expressions can model many important phenomena. Two important families of functions characterized by laws of growth are linear functions, which grow at a constant rate, and exponential functions, which grow at a constant percent rate. Linear functions with a constant term of zero describe proportional relationships.

A graphing utility or a CAS can be used to experiment with properties of the functions and their graphs and to build computational models of functions, including recursively defined functions.

Connections to Expressions, Equations, Modeling and Coordinates. Determining an output value for a particular input involves evaluating an expression; finding inputs that yield a given output involves solving an equation. Questions about when two functions have the same value lead to equations, whose solutions can be visualized from the intersection of their graphs. Because functions describe relationships between quantities, they are frequently used in modeling. Sometimes functions are defined by a recursive process, which can be displayed effectively using a spreadsheet or other technology.

Content Outline

Interpreting Functions

Building Functions

Linear, Quadratic, and Exponential Models

Trigonometric Functions

Limits and Continuity†

Differential Calculus†

Applications of Derivatives†

Integral Calculus†

Applications of Integration†

Infinite Series†

† Specific standards for calculus domains are not listed.

Interpreting Functions A-IF

1. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x.
2. Understand that functions of a single variable have key characteristics, including: zeros; extreme values; average rates of change (over intervals); intervals of increasing, decreasing and/or constant behavior; and end behavior.
3. Understand that a function defined by an expression may be written in different but equivalent forms, which can reveal different properties of the function.
4. Use function notation and evaluate functions for inputs in their domains.
5. Describe qualitatively the functional relationship between two quantities by reading a graph (e.g., where the function is increasing or decreasing, what its long-run behavior appears to be, and whether it appears to be periodic). ★
6. Sketch a graph that exhibits the qualitative features of a function that models a relationship between two quantities. ★
7. Compare properties of two functions represented in different ways (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, draw conclusions about the graph of a quadratic function from its algebraic expression.*
8. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. *For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.* ★
9. Describe the qualitative behavior of functions presented in graphs and tables. *Identify: intercepts; intervals where the function is increasing, decreasing, positive or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.* ★
10. Use technology to exhibit the effects of parameter changes on the graphs of linear, power, quadratic, square root, cube root, and polynomial functions, and simple rational, exponential, logarithmic, sine, cosine, absolute value, and step functions. ★
11. Transform quadratic polynomials algebraically to reveal different features of the function they define, such as zeros, extreme values, and symmetry of the graph.

Building Functions A-BF

1. Understand that functions can be described by specifying an explicit expression, a recursive process or steps for calculation.
2. Understand that sequences are functions whose domain is a subset of the nonnegative integers.
3. STEM Understand that composing a function f with a function g creates a new function called the composite function—for an input number x, the output of the composite function is $f(g(x))$.
4. STEM Understand that the inverse of an invertible function "undoes" what the function does; that is, composing the function with its inverse in either order returns the original input. One can sometimes produce an invertible function from a non-invertible function by restricting the domain (e.g., squaring is not an invertible function on the real numbers, but squaring is invertible on the nonnegative real numbers).
5. Write a function that describes a relationship between two quantities, for example by varying parameters in and combining standard function types (such as linear, quadratic or exponential functions). Use technology to experiment with parameters and to illustrate an explanation of the behavior of the function when parameters vary. ★
6. Solve problems involving linear, quadratic, and exponential functions. ★
7. Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $kf(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.
8. Generate an arithmetic or geometric sequence given a recursive rule for the sequence. ★
9. As a way to describe routine modeling situations, write arithmetic and geometric sequences both recursively and in closed form, and translate between the two forms. ★
10. STEM Evaluate composite functions and compose functions symbolically.
11. STEM Read values of an inverse function from a graph or a table, given that the function has an inverse.
12. STEM For linear or simple exponential functions, find a formula for an inverse function by solving an equation.
13. STEM Verify symbolically by composition that one function is the inverse of another.

Linear, Quadratic, and Exponential Models A-LQE

1. Understand that a linear function, defined by $f(x) = mx + b$ for some constants m and b, models a situation in which a quantity changes at a constant rate, m, relative to another. ★
2. Understand that quadratic functions have maximum or minimum values and can be used to model problems with optimum solutions. ★
3. Understand that an exponential function, defined by $f(x) = ab^x$ or by $f(x) = a(1 + r)^x$ for some constants a, $b > 0$ and $r > -1$, models a situation where a quantity grows or decays by a constant factor or a constant percentage change over each unit interval. ★
4. Understand that linear functions grow by equal differences over equal intervals; exponential functions grow by equal factors over equal intervals. ★
5. Understand that in an arithmetic sequence, differences between consecutive terms form a constant sequence, and second differences are zero. Conversely, if the second differences are zero, the sequence is arithmetic. Arithmetic sequences can be seen as linear functions. ★
6. Understand that in a sequence that increases quadratically (e.g., $a_n = 3n^2 + 2n + 1$), differences between consecutive terms form an arithmetic sequence, and second differences form a constant sequence. Conversely, if the second differences form a constant sequence with nonzero value, the sequence increases quadratically. ★
7. Understand that in a geometric sequence, ratios of consecutive terms are all the same. ★
8. Understand that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function. ★
9. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph. ★
10. Construct a function to describe a linear relationship between two quantities. Determine the rate of change and constant term of a linear function from a graph, a description of a relationship, or from two (x, y) values (include reading these from a table). ★
11. Use quadratic functions to model problems, e.g., in situations with optimum solutions. ★
12. Construct an exponential function in the form $f(x) = a(1 + r)^x$ or $f(x) = ab^x$ to describe a relationship in which one quantity grows with respect to another at a constant percent growth rate or a with a constant growth factor. ★
13. Interpret the rate of change and constant term of a linear function or sequence in terms of the situation it models, and in terms of its graph or a table of values. ★
14. Calculate and interpret the growth factor for an exponential function (presented symbolically or as a table) given a fixed interval. Estimate the growth factor from a graph. ★
15. Recognize a quantitative relationship as linear, exponential, or neither from description of a situation. ★
16. Compare quantities increasing exponentially to quantities increasing linearly or as a polynomial function. ★

Trigonometric Functions F-TF

1. STEM Understand that the unit circle in the coordinate plane enables one to define the sine, cosine, and tangent functions for real numbers.
2. STEM Understand that trigonometric functions are periodic by definition, and sums and products of functions with the same period are periodic.
3. STEM Understand that restricting trigonometric functions to a domain on which they are always increasing or always decreasing allows for the construction of an inverse function.
4. STEM Revisit trigonometric functions and their graphs in terms of radians.
5. STEM Use the unit circle to determine geometrically the values of sine, cosine, tangent for integer multiples of $\pi/4$ and $\pi/6$.
6. STEM Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.
7. STEM Solve simple trigonometric equations formally using inverse trigonometric functions and evaluate the solutions numerically using technology. *Solving trigonometric equations by means of the quadratic formula is optional.*

Limits and Continuity† F-LC

★ Standard with close connection to modeling.

† Specific standards for calculus domains are not listed.

Differential Calculus† F-DC

Applications of Derivatives† F-AD

Integral Calculus† F-IC

Applications of Integration† F-AI

Infinite Series† F-IS

DRAFT

† Specific standards for calculus domains are not listed.

Modeling links classroom mathematics and statistics to everyday life, work, and decision-making. Modeling is the process of choosing and using appropriate mathematics and statistics to analyze empirical situations, to understand them better, and to improve decisions. Quantities and their relationships in physical, economic, public policy, social and everyday situations can be modeled using mathematical and statistical methods. When making mathematical models, technology is valuable for varying assumptions, exploring consequences, and comparing predictions with data.

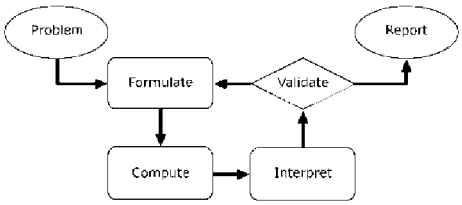
A model can be very simple, such as writing total cost as a product of unit price and number bought, or using a geometric shape to describe a physical object like a coin. Even such simple models involve making choices. It is up to us whether to model a coin as a three-dimensional cylinder, or whether a two-dimensional disk works well enough for our purposes. Other situations—modeling a delivery route, a production schedule, or a comparison of loan amortizations—need more elaborate models that use other tools from the mathematical sciences. Real-world situations are not organized and labeled for analysis; formulating tractable models, representing such models, and analyzing them is appropriately a creative process. Like every such process, this depends on acquired expertise as well as creativity.

Some examples of such situations might include:

- Estimating how much water and food is needed for emergency relief in a devastated city of 3 million people, and how it might be distributed.
- Planning a table tennis tournament for 7 players at a club with 4 tables, where each player plays against each other player.
- Designing the layout of the stalls in a school fair so as to raise as much money as possible.
- Analyzing stopping distance for a car.
- Modeling savings account balance, bacterial colony growth, or investment growth.
- Critical path analysis, e.g., applied to turnaround of an aircraft at an airport.
- Risk situations, like extreme sports, pandemics and terrorism.
- Relating population statistics to individual predictions.

In situations like these, the models devised depend on a number of factors: How precise an answer do we want or need? What aspects of the situation do we most need to understand, control, or optimize? What resources of time and tools do we have? The range of models that we can create and analyze is also constrained by the limitations of our mathematical, statistical, and technical skills, and our ability to recognize significant variables and relationships among them. Diagrams of various kinds, spreadsheets and other technology, and algebra are powerful tools for understanding and solving problems drawn from different types of real-world situations.

One of the insights provided by mathematical modeling is that essentially the same mathematical or statistical structure can model seemingly different situations. Models can also shed light on the mathematical structures themselves, for example as when a model of bacterial growth makes more vivid the explosive growth of the exponential function.



The basic modeling cycle is summarized in the diagram. It involves (1) identifying variables in the situation and selecting those than represent essential features, (2) formulating a model by creating and selecting geometric, graphical, tabular, algebraic, or statistical representations that describe relationships between the variables, (3) analyzing and performing operations on these relationships to draw conclusions, (4) interpreting the results of the mathematics in terms of the original situation, (5) validating the conclusions by comparing them with the situation, and then, either improving the model or, if it is acceptable, (6) reporting on the conclusions and the reasoning behind them. Choices, assumptions and approximations are present throughout this cycle.

In descriptive modeling, a model simply describes the phenomena or summarizes them in a compact form. Graphs of observations are a familiar descriptive model—for example, graphs of global temperature and atmospheric CO_2 over time.

Analytic modeling seeks to explain data on the basis of deeper theoretical ideas, albeit with parameters that are empirically based; for example, exponential growth of bacterial colonies (until cut-off mechanisms such as pollution or starvation intervene) follows from a constant reproduction rate. Functions are an important tool for analyzing such

problems.

Graphing utilities, spreadsheets, CAS environments, and dynamic geometry software are powerful tools that can be used to model purely mathematical phenomena (e.g., the behavior of polynomials) as well as physical phenomena.

Modeling Standards

Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appear throughout the high school standards indicated by a star symbol (★).

DRAFT

Mathematics | High School—Statistics and Probability*

Decisions or predictions are often based on data—numbers in context. These decisions or predictions would be easy if the data always sent a clear message, but the message is often obscured by variability. Statistics provides tools for describing variability in data and for making informed decisions that take it into account.

Data are gathered, displayed, summarized, examined, and interpreted to discover patterns and deviations from patterns. Quantitative data can be described in terms of key characteristics: measures of shape, center, and spread. The shape of a data distribution might be described as symmetric, skewed, flat, or bell shaped, and it might be summarized by a statistic measuring center (such as mean or median) and a statistic measuring spread (such as standard deviation or interquartile range). Different distributions can be compared numerically using these statistics or compared visually using plots. Knowledge of center and spread are not enough to describe a distribution. Which statistics to compare, which plots to use, and what the results of a comparison might mean, depend on the question to be investigated and the real-life actions to be taken.

Randomization has two important uses in drawing statistical conclusions. First, collecting data from a random sample of a population makes it possible to draw valid conclusions about the whole population, taking variability into account. Second, randomly assigning individuals to different treatments allows a fair comparison of the effectiveness of those treatments. A statistically significant outcome is one that is unlikely to be due to chance alone, and this can be evaluated only under the condition of randomness. The conditions under which data are collected are important in drawing conclusions from the data; in critically reviewing uses of statistics in public media and other reports it is important to consider the study design, how the data were gathered, and the analyses employed as well as the data summaries and the conclusions drawn.

Random processes can be described mathematically by using a probability model. One begins to make a probability model by listing or describing the possible outcomes (the sample space) and assigning probabilities. In situations such as flipping a coin, rolling a number cube, or drawing a card, it might be reasonable to assume various outcomes are equally likely. In a probability model, sample points represent outcomes and combine to make up events; probabilities of events can be computed by applying the additive and multiplicative laws of probability. Interpreting these probabilities relies on an understanding of independence and conditional probability, which can be approached through the analysis of two-way tables.

Technology plays an important role in statistics and probability by making it possible to generate plots, functional models, and correlation coefficients, and to simulate many possible outcomes in a short amount of time.

Connections to Functions and Modeling. Functional models may be used to approximate data; if the data are approximately linear, the relationship may be modeled with a regression line and the strength and direction of such a relationship may be expressed through a correlation coefficient.

Content Outline

Summarizing Categorical and Measurement Data

Probability Models

Independently Combined Probability Models

Making Inferences and Justifying Conclusions Drawn from Data

Conditional Probability and the Laws of Probability

Experimenting and Simulating to Model Probabilities

Using Probability to Make Decisions

* Most or all of the standards in Statistics and Probability have a close connection to modeling.

Summarizing Categorical and Quantitative Data S-SI

1. Understand that statistical methods take variability into account to support making informed decisions based on data collected to answer specific questions.
2. Understand that visual displays and summary statistics condense the information in data sets into usable knowledge.
3. Understand that patterns of association or relationships between variables may emerge through careful analysis of multi-variable data.
4. Summarize comparative or bivariate categorical data in two-way frequency tables. Interpret joint, marginal and conditional relative frequencies in the context of the data, recognizing possible associations and trends in bivariate categorical data.
5. Compare data on two or more count or measurement variables by using plots on the real number line (dot plots, histograms, and box plots). Use statistics appropriate to the shape of the data distribution to summarize center (median, mean) and spread (interquartile range, standard deviation) of the data sets. Interpret changes in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).
6. Represent bivariate quantitative data on a scatter plot and describe how the variables are related.
7. Fit a linear function for scatter plots that suggest a linear association. Informally assess the fit of the model function by plotting and analyzing residuals.
8. Use a model function fitted to the data to solve problems in the context of the data, interpreting the slope (rate of change) and the intercept (constant term).
9. Compute (using technology) and interpret the correlation coefficient for a linear relationship between variables.
10. Distinguish between correlation and causation.

Probability Models S-PM

1. Understand that in a probability model, individual outcomes have probabilities that sum to 1. When outcomes are categorized, the probability of a given type of outcome is the sum of the probabilities of all the individual outcomes of that type.
2. Understand that uniform probability models are useful models for processes such as (i) the selection of a person from a population; (ii) the selection of a number in a lottery; (iii) any physical situation in which symmetry suggests that different individual outcomes are equally likely.
3. Understand that two different empirical probability models for the same process will rarely assign exactly the same probability to a given type of outcome. But if the data sets are large and the methods used to collect the data for the two data sets are consistent, the agreement between the models is likely to be reasonably good.
4. Understand that a (theoretical) uniform probability model may be judged by comparing it to an empirical probability model for the same process. If the theoretical assumptions are appropriate and the data set is large, then the two models should agree approximately. If the agreement is not good, then it may be necessary to modify the assumptions underlying the theoretical model or look for factors that might have affected the data used to create the empirical model.
5. Use a uniform probability model to compute probabilities for a process involving uncertainty, including the random selection of a person from a population and physical situations where symmetry suggests that different individual outcomes are equally likely.
   a. List the individual outcomes to create a sample space.
   b. Label the individual outcomes in the sample space to reflect important characteristics or quantities associated with them.
   c. Determine probabilities of individual outcomes, and determine the probability of a type or category of outcome as the fraction of individual outcomes it includes.
6. Generate data by sampling, repeated experimental trials, and simulations. Record and appropriately label such data, and use them to construct an empirical probability model. Compute probabilities in such models.
7. Compare probabilities from a theoretical model to probabilities from a corresponding empirical model for the same situation. If the agreement is not good, explain possible sources of the discrepancies.

Independently Combined Probability Models S-IPM

1. Understand that to describe a pair of random processes (such as tossing a coin and rolling a number cube), or one random process repeated twice (such as randomly selecting a student in the class on two different days), two probability models can be combined into a single model.

a. The sample space for the combined model is formed by listing all possible ordered pairs that combine an individual outcome from the first model with an individual outcome from the second. Each ordered pair is an individual outcome in the combined model.

b. The total number of individual outcomes (ordered pairs) in the combined model is the product of the number of individual outcomes in each of the two original models.

2. Understand that when two probability models are combined independently, the probability that one type of outcome in the first model occurs together with another type of outcome in the second model is the product of the two corresponding probabilities in the original models (the Multiplication Rule).
3. Combine two uniform models independently to compute probabilities for a pair of random processes (e.g., flipping a coin twice, selecting one person from each of two classes).

a. Use organized lists, tables and tree diagrams to represent the combined sample space.

b. Determine probabilities of ordered pairs in the combined model, and determine the probability of a particular type or category of outcomes in the combined model, as the fraction of ordered pairs corresponding to it.

4. For two independently combined uniform models, use the Multiplication Rule to determine probabilities.

Making Inferences and Justifying Conclusions S-IC

1. Understand that statistics is a process for making inferences about population parameters based on a sample from that population; randomness is the foundation for statistical inference.
2. Understand that the design of an experiment or sample survey is of critical importance to analyzing the data and drawing conclusions.
3. Understand that simulation-based techniques are powerful tools for making inferences and justifying conclusions from data.
4. Use probabilistic reasoning to decide if a specified model is consistent with results from a given data-generating process. (For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?)
5. Recognize the purposes of and differences among sample surveys, experiments and observational studies; explain how randomization relates to each.
6. Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.
7. Use data from a randomized experiment to compare two treatments; justify significant differences between parameters through the use of simulation models for random assignment.
8. Evaluate reports based on data.

Conditional Probability and the Laws of Probability S-CP

1. Understand that events are subsets of a sample space; often, events of interest are defined by using characteristics (or categories) of the sample points, or as unions, intersections, or complements thereof ("and," "or," "not"). A sample point may belong to several events (categories).
2. Understand that if A and B are two events, then in a uniform model the conditional probability of A given B, denoted by $P(A \mid B)$, is the fraction of B's sample points that also lie in A.
3. Understand that the laws of probability allow one to use known probabilities to determine other probabilities of interest.
4. Compute probabilities by constructing and analyzing sample spaces, representing them by tree diagrams, systematic lists, and Venn diagrams.
5. Use the laws of probability to compute probabilities.
6. Apply concepts such as intersections, unions and complements of events, and conditional probability and independence to define or analyze events, calculate probabilities and solve problems.
7. Construct and interpret two-way tables to show probabilities when two characteristics (or categories) are associated with each sample point. Use a two-way table to determine conditional probabilities. ★
8. Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. ★
9. Use permutations and combinations to compute probabilities of compound events and solve problems.

★ Standard with close connection to modeling.

Experimenting and Simulating to Model Probabilities S-ES

1. Understand that sets of data obtained from surveys, simulations or other means can be used as probability models, by treating the data set itself as a sample space, in which the sample points are the individual pieces of data.
2. Understand that the probability of an outcome can be interpreted as an assertion about the long-run proportion of the outcome's occurrence if the random experiment is repeated a large number of times.
3. Calculate experimental probabilities by performing simulations or experiments involving a probability model and using relative frequencies of outcomes.
4. Compare the results of simulations with predicted probabilities. When there are substantial discrepancies between predicted and observed probabilities, explain them.
5. Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets and tables to estimate areas under the normal curve.

Using Probability to Make Decisions S-MD

1. Understand that the expected value of a random variable is the weighted average of its possible values, with weights given by their respective probabilities.
2. Understand that when the possible outcomes of a decision can be assigned probabilities and payoff values, the decision can be analyzed as a random variable with an expected value, e.g., of an investment.
3. Calculate expected value, e.g. to determine the fair price of an investment.
4. Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).
5. Evaluate and compare two investments or strategies with the same expected value, where one investment or strategy is safer than the other.
6. Evaluate and compare two investments or strategies, where one investment or strategy is safer but has lower expected value. Include large and small investments, and situations with serious consequences.
7. Analyze decisions and strategies using probability concepts (e.g. product testing, medical testing, pulling a hockey goalie at the end of a game).

DRAFT

An understanding of the attributes and relationships of geometric objects can be applied in diverse contexts—interpreting a schematic drawing, estimating the amount of wood needed to frame a sloping roof, rendering computer graphics, or designing a sewing pattern for the most efficient use of material.

Understanding the attributes of geometric objects often relies on measurement: a circle is a set of points in a plane at a fixed distance from a point; a cube is bounded by six squares of equal area; when two parallel lines are crossed by a transversal, pairs of corresponding angles are congruent.

The concepts of congruence, similarity and symmetry can be united under the concept of geometric transformation. Reflections and rotations each explain a particular type of symmetry, and the symmetries of an object offer insight into its attributes—as when the reflective symmetry of an isosceles triangle assures that its base angles are congruent. Applying a scale transformation to a geometric figure yields a similar figure. The transformation preserves angle measure, and lengths are related by a constant of proportionality.

The definitions of sine, cosine and tangent for acute angles are founded on right triangle similarity, and, with the Pythagorean theorem, are fundamental in many real-world and theoretical situations.

Coordinate geometry is a rich field for exploration. How does a geometric transformation such as a translation or reflection affect the coordinates of points? How is the geometric definition of a circle reflected in its equation? Coordinates can describe locations in three dimensions and extend the use of algebraic techniques to problems involving the three-dimensional world we live in.

Dynamic geometry environments provide students with experimental and modeling tools that allow them to investigate geometric phenomena in much the same was as CAS environments allow them to experiment with algebraic phenomena.

Connections to Equations and Inequalities. The correspondence between numerical coordinates and geometric points allows methods from algebra to be applied to geometry and vice versa. The solution set of an equation becomes a geometric curve, making visualization a tool for doing and understanding algebra. Geometric shapes can be described by equations, making algebraic manipulation into a tool for geometric understanding, modeling and proof.

Content Outline

Congruence

Similarity, Right Triangles, and Trigonometry

Circles

Expressing Geometric Properties with Equations

Trigonometry of General Triangles

Geometric Measurement and Dimension

Modeling with Geometry

Congruence G-CO

1. Understand that two geometric figures are congruent if there is a sequence of rigid motions (rotations, reflections, translations) that carries one onto the other. This is the principle of superposition.
2. Understand that criteria for triangle congruence are ways to specify enough measures in a triangle to ensure that all triangles drawn with those measures are congruent.
3. Understand that criteria for triangle congruence (ASA, SAS, and SSS) can be established using rigid motions.
4. Understand that geometric diagrams can be used to test conjectures and identify logical errors in fallacious proofs.
5. Know and use (in reasoning and problem solving) definitions of angles, polygons, parallel, and perpendicular lines, rigid motions, parallelograms and rectangles.
6. Prove theorems about lines and angles. *Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; two lines parallel to a third are parallel to each other; points on a perpendicular bisector of a segment are exactly those equidistant from the segment's endpoints.*
7. Prove theorems about triangles. *Theorems include: measures of interior angles of a triangle sum to 180°, base angles of isosceles triangles are congruent, the triangle inequality, the longest side of a triangle faces the angle with the greatest measure and vice-versa, the exterior-angle inequality, and the segment joining midpoints of two sides of a triangle parallel to the third side and half the length.*
8. Use and prove properties of and relationships among special quadrilaterals: parallelogram, rectangle, rhombus, square, trapezoid and kite.
9. Characterize parallelograms in terms of equality of opposite sides, in terms of equality of opposite angles, and in terms of bisection of diagonals; characterize rectangles as parallelograms with equal diagonals.
10. Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc). *Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.*
11. Construct an equilateral triangle, a square and a regular hexagon inscribed in a circle.
12. Use two-dimensional representations to transform figures and to predict the effect of translations, rotations, and reflections.
13. Use two-dimensional representations to transform figures and to predict the effect of dilations.

Similarity, Right Triangles, and Trigonometry G-SRT

1. Understand that dilating a line produces a line parallel to the original. (In particular, lines passing through the center of the dilation remain unchanged.)
2. Understand that the dilation of a given segment is parallel to the given segment and longer or shorter in the ratio given by the scale factor. A dilation leaves a segment unchanged if and only if the scale factor is 1.
3. Understand that the assumed properties of dilations can be used to establish the AA, SAS, and SSS criteria for similarity of triangles.
4. Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of sine, cosine, and tangent.
5. Understand that a line parallel to one side of a triangle divides the other two proportionally, and conversely.
6. Use triangle similarity criteria to solve problems and to prove relationships in geometric figures. *Include a proof of the Pythagorean theorem using triangle similarity.*
7. Use and explain the relationship between the sine and cosine of complementary angles.
8. Use sine, cosine, tangent, and the Pythagorean Theorem to solve right triangles[2] in applied problems.
9. STEM Give an informal explanation using successive approximation that a dilation of scale factor r changes the length of a curve by a factor of r and the area of a region by a factor of r^2.

Circles G-C

1. Understand that dilations can be used to show that all circles are similar.
2. Understand that there is a unique circle through three non-collinear points, and four circles tangent to three non-concurrent lines.

[2] A right triangle has five parameters, its three lengths and two acute angles. Given a length and any other parameter, "solving a right triangle" means finding the remaining three parameters.

3. Identify and define radius, diameter, chord, tangent, secant, and circumference.
4. Identify and describe relationships among angles, radii, and chords. *Include the relationship between central, inscribed and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.*
5. Determine the arc lengths and the areas of sectors of circles, using proportions.
6. STEM Construct a tangent line from a point outside a given circle to the circle.
7. STEM Prove and use theorems about circles, and use these theorems to solve problems involving:
   a. Symmetries of a circle
   b. Similarity of a circle to any other
   c. Tangent line, perpendicularity to a radius
   d. Inscribed angles in a circle, relationship to central angles, and equality of inscribed angles
   e. Properties of chords, tangents, and secants as an application of triangle similarity.

Expressing Geometric Properties with Equations G-GPE

1. Understand that two lines with well-defined slopes are perpendicular if and only if the product of their slopes is equal to –1.
2. Understand that the equation of a circle can be found using its definition and the Pythagorean Theorem.
3. Understand that transforming the graph of an equation by reflecting in the axes, translating parallel to the axes, or applying a dilation in one of the coordinate directions corresponds to substitutions in the equation.
4. STEM Understand that an ellipse is the set of all points whose distances from two fixed points (the foci) are a constant sum. The graph of $x^2/a^2 + y^2/b^2 = 1$ is an ellipse with foci on one of the axes.
5. STEM Understand that a parabola is the set of points equidistant from a fixed point (the focus) and a fixed line (the directrix). The graph of any quadratic function is a parabola, and all parabolas are similar.
6. STEM Understand that the formula $A = \pi ab$ for the area of an ellipse can be derived from the formula for the area of a circle.★
7. Use the slope criteria for parallel and perpendicular lines to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).
8. Find the point on the segment between two given points that divides the segment in a given ratio.
9. Use coordinates to compute perimeters of polygons and areas for triangles and rectangles, e.g. using the distance formula.★
10. Decide whether a point with given coordinates lies on a circle defined by a given equation.
11. Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point $(1, \sqrt{3})$ lies on the circle centered at the origin and containing the point (0, 2).
12. Complete the square to find the center and radius of a circle given by an equation.
13. STEM Find an equation for an ellipse given in the coordinate plane with major and minor axes parallel to the coordinate axes.
14. STEM Calculate areas of ellipses to solve problems.★

Trigonometry of General Triangles G-TGT

1. STEM Understand that the formula $A = \frac{1}{2} ab \sin(C)$ for the area of a triangle can be derived by drawing an auxiliary line from a vertex perpendicular to the opposite side. Applying this formula in three different ways leads to the Law of Sines.
2. STEM Understand that the Law of Cosines generalizes the Pythagorean Theorem.
3. STEM Understand that the sine, cosine and tangent of the sum or difference of two angles can be expressed in terms of sine, cosine, and tangent of the angles themselves using the addition formulas.
4. STEM Understand that the Laws of Sines and Cosines embody the triangle congruence criteria, in that three pieces of information are usually sufficient to completely solve a triangle. Furthermore, these laws yield two possible solutions in the ambiguous case, illustrating that "Side-Side-Angle" is not a congruence criterion.
5. STEM Explain proofs of the Law of Sines and the Law of Cosines.

★ Standard with close connection to modeling.

6. STEM Use the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).

Geometric Measurement and Dimension G-GMD

1. Understand that the area of a decomposed figure is the sum of the areas of its components and is independent of the choice of dissection.
2. STEM Understand that lengths of curves and areas of curved regions can be defined using the informal notion of limit.
3. STEM Understand that Cavalieri's principle allows one to understand volume formulas informally by visualizing volumes as stacks of thin slices.
4. Find areas of polygons by dissecting them into triangles.
5. Explain why the volume of a cylinder is the area of the base times the height, using informal arguments.
6. For a pyramid or a cone, give a heuristic argument to show why its volume is one-third of its height times the area of its base.
7. Apply formulas and solve problems involving volume and surface area of right prisms, right circular cylinders, right pyramids, cones, spheres and composite figures.
8. STEM Identify cross-sectional shapes of slices of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.
9. STEM Use the behavior of length and area under dilations to show that the circumference of a circle is proportional to the radius and the area of a circle is proportional to the square of the radius. Identify the relation between the constants of proportionality with an informal argument involving dissection and recomposition of a circle into an approximate rectangle.

Modeling with Geometry G-MG

1. Understand that models of objects and structures can be built from a library of standard shapes; a single kind of shape can model seemingly different objects. ★
2. Use geometric shapes, their measures and their properties to describe objects (e.g., modeling a tree trunk or a human torso or as a cylinder). ★
3. Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot). ★
4. Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy constraints or minimize cost; working with typographic grid systems based on ratios). ★

★ Standard with close connection to modeling.

Appendix B1.6

Letter of Support for Common Core Standards

OSSE
DC Office of the
State Superintendent
of Education

October 21, 2009

Gene Wilhoit, Executive Director
Council of Chief State School Officers
One Massachusetts Avenue, NW · Suite 700
Washington, DC 20001-1431

Dear Gene,

We have reviewed the College and Career Readiness Standards released on September 21, 2009 and agree with the revisions and the additions from the Council of Chief State School Officers (CCSSO) and National Governors Association (NGA). We are pleased to offer the continued support of the District of Columbia's Office of the State Superintendent of Education (OSSE) and State Board of Education (SBOE), and look forward to the release of the content standards for kindergarten through grade 12 early next year. We applaud the committee's efforts to move towards fewer, clearer, and higher standards and appreciate its review of the feedback provided and the changes made to strengthen the initiative.

OSSE and SBOE discussed the College and Career Readiness Standards with school districts, members of postsecondary community in DC, and the public, most of which were supportive of the work that's been done so far. For instance, Dr. Jonathan Gueverra, Chief Executive Officer of the Community College of the District of Columbia (CCDC) testified at a public hearing emphasizing the importance of aligning standards to college readiness expectations, particularly to mitigate the remediation rate. Dr. Robert Mayo, testifying on behalf of the District of Columbia Public Charter School Board, pledged their support of the standards and the importance of graduating students prepared for the demands of post-secondary education, meaningful careers and to be able to compete and contribute globally.

After reviewing the standards, we are pleased to note the close alignment of the District's current English/Language Arts Standards with the End of High School Expectations. While we will need to shift to using more informational text and an expectation that all teachers integrate reading skills in their instruction, the new standards will provide the basis for OSSE to call for stronger reading and analytical skills across the board. We particularly appreciated the strengthening of the English/Language Arts expectations and the sample reading passages. Providing such specificity permits OSSE to better plan for the eventual, and hopefully speedy, adoption of these standards.

One Judiciary Square, 441 4th Street, NW Suite 350 North, Washington, DC 20001
Phone: 202.727.6436 ◆ Fax: 202.727.2019 ◆ www.osse.dc.gov

The mathematics content standards represent a more profound shift from the current DC standards, as they suggest a conceptual shift from algorithmic fluency to conceptual understanding. This shift to a deeper conceptual understanding of fewer topic areas will better prepare our students to move into higher education and the workforce. These new standards are crucial building blocks for higher-level mathematics.

Our biggest obstacle for a successful implementation will be the investment in significant and on-going professional development for teachers. OSSE has begun to consider the options for addressing the areas of greatest concerns for teachers and providing the necessary supports as we transition to these new standards. As noted in our comments on the first draft of the standards, we hope that CCSSO and NGA will support states by disseminating strategies and best practices around the necessary professional development.

The college readiness standards represent a first step in the right direction for students across the country and particularly for students in the District of Columbia. Higher and fewer standards will result in greater achievements for students, increased transparency for schools, and reduced costs for states – permitting states to create better and more precise measures of school accountability. The city is proud to be part of this effort. On behalf of the District of Columbia, we would like to thank you for your commitment to a better education system for all kids.

We look forward to reviewing the content standards for kindergarten through grade 12 and to begin the hard work of adoption and implementation. We are confident that the District's educational stakeholders share our interest, which we know will be vital in ensuring successful implementation. If you have any questions or concerns, please contact Cathie Carothers, Assistant Superintendent of Elementary and Secondary Education, at cathie.carothers@dc.gov.

Sincerely,

Kerri L. Briggs, PhD.
State Superintendent of Education

Lisa Raymond
President, State Board of Education

cc: Mayor Adrian Fenty
Deputy Mayor Reinoso

Appendix B2.1

MOA Common Core Assessment - PARCC

PARTNERSHIP FOR ASSESSMENT OF READINESS FOR COLLEGE AND CAREERS
MEMORANDUM OF UNDERSTANDING

Purpose. This document commits states to participate in the Partnership for Assessment of Readiness for College and Career, a state-led consortium that will collaborate on the development of common, high-quality assessments aligned to the Common Core State Standards (CCSS) in English language arts and mathematics for grades 3-8 and high school. The primary goal of the Partnership's work is to measure and document students' college and career readiness against common academic standards and to measure students' progress toward this target throughout the rest of the system.

While participating in the Partnership demonstrates the state's commitment to pursue a common assessment system that enables comparisons against the CCSS across all Partnership states, it does not commit the state to a specific assessment design at this point. Partnership states are still considering several options for the design of a common assessment system in pursuit of the Race to the Top (RTTT) Comprehensive Assessments Grant and will not be asked to commit to the Partnership's application until a later date. Until that time, all participating states will have the opportunity to contribute to and shape the Partnership's proposal.

Preliminary Design Principles. Partnership states have identified the following major purposes and uses for the assessment system. As the Partnership collaborates to develop its application for the RTTT assessment competition, these purposes will guide its work.

- The primary purpose is to measure and document students' **college and career readiness** and to measure students' progress toward this target throughout the rest of the system. Students meeting the college and career readiness standards will be eligible for placement into entry-level credit-bearing, rather than remedial, courses in public 2- and 4-year postsecondary institutions in participating states.

- Additionally, the partnership is committed to ensuring that the assessment results:
    - Are **comparable across states** at the student level;
    - Meet **internationally rigorous benchmarks;**
    - Support valid assessment of **student longitudinal growth**; and
    - Serve as a **signal for good instructional practices**.

- The results must be able to support multiple levels and forms of accountability including:
    - Decisions about **promotion and graduation for individual students**,
    - **Teacher and leader evaluations**, and
    - **School accountability** determinations.

Roles and Responsibilities of Partnership States. The Partnership will employ a multi-level governance and management structure designed to guide the partnership through the submission of the proposal.

- The **Governing States** are comprised of a representative group of leaders from Partnership states that are committed to implementing the assessment system developed by the partnership, should it win a grant from the Race to the Top Comprehensive Assessment System competition, and are responsible for guiding the proposal development process. Each Governing State will commit a team comprised of the chief, assessment director, and other key officials from the SEA, Governor's office, and higher education as appropriate.
- The **Proposal Design Team** will include officials from partnership states who will work with an advisory group of national and international experts to create an assessment system design for the Partnership's proposal. The design team will include as many states as are interested in and capable of contributing to and shaping the design of the proposed next generation assessment system.

- **Participating States** will include other partnership states that are unable to provide staff time to the design team but will provide rapid feedback on drafts of the proposal through the development phase.

State Commitment. This memorandum of understanding is voluntary and non-binding for states. States signing this MOU should do so with the intent of continuing in the Partnership through the proposal development, assessment development, and implementation phases. However, there will be an opportunity for states re-assess their participation in the Partnership before it submits its application for a Race to the Top Comprehensive Assessment Systems Grant by June 23, 2010.

Agreement. The undersigned state leader agrees to the process and structure as described above and attests accordingly by his/her signature below.

Signature(s) for the State of: District of Columbia	
Authorized State Signature:	
Name: Kerri L. Briggs, Ph.D.	Date: May 4, 2010
Title: State Superintendent of Education	

Appendix B2.2

Common Core Assessment (PARCC) List of States

PARTICIPATING STATES

MAY 25, 2010

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1. Alabama
2. Arizona
3. Arkansas
4. California
5. Colorado
6. Delaware
7. District of Columbia
8. Florida
9. Georgia
10. Hawaii
11. Illinois
12. Indiana
13. Kentucky
14. Louisiana
15. Maryland
16. Massachusetts
17. Mississippi
18. New Hampshire
19. New Jersey
20. New York
21. North Dakota
22. Ohio
23. Oklahoma
24. Pennsylvania
25. Rhode Island
26. South Carolina
27. Tennessee

Appendix B3.1

Common Core Standards Home Page Screenshot

State Superintendent of Education: K-12 Common Core State Standards - Windows Internet Explorer

http://osse.dc.gov/seo/cwp/view,a,1274,Q,964206,PM,1.asp

ed trust achievement gap

File Edit View Favorites Tools Help

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Gmail - Inbox - ericlerum@gm... | State Superintendent of ...

Page Safety

District of Columbia | MAYOR FENTY | DC GUIDE | RESIDENTS | BUSINESS | VISITORS | GOVERNMENT | FOR KIDS

State Superintendent of Education

OSSE HOME

PROGRAMS

INFORMATION

STATE BOARD OF EDUCATION

ONLINE SERVICE REQUESTS

K-12 Common Core State Standards

The Common Core State Standards Initiative is a state-led effort to establish a single set of clear educational standards for English-language arts and mathematics that states can share and voluntarily adopt. The standards have been informed by the best available evidence and the highest state standards across the country, so they reflect both our aspirations for our children and the realities of the classroom. These standards are designed to ensure that students graduating from high school are prepared to go to college or enter the workforce and that parents, teachers, and students have a clear understanding of what is expected of them.

The National Governors Association Center for Best Practices (NGA Center) and the Council of Chief State School Officers (CCSSO) recently released the first public draft of the K-12 standards. The Office of the State Superintendent of Education has been involved with the process from the beginning and is now conducting a thorough review of the standards by teachers, administrators, curriculum coaches, university staff and advocacy groups.

The State Board of Education is scheduled hold a public hearing on May, 5, 2010, and vote on an adoption proposal June 16, 2010.

The following links provide additional detailed information about the Common Core Standards as well as OSSE involvement and steps towards possible adoption.

- DC Common Core Memorandum of Agreement*
- Feedback to CCSSO on College and Career Readiness Skills – July 31, 2009*
- Statement of support to CCSSO on College and Career Readiness Skills – October 21, 2009*
- Feedback to CCSSO on first draft of K-12 Common Core Standards – December 4, 2009*
- Feedback to CCSSO on second draft of K-12 Common Core Standards – January 22, 2010*
- Side by side comparison of current DC Standards to Common Core Standards – English Language Arts*
- Side by side comparison of current DC Standards to Common Core Standards – Mathematics*
- Instructions and Guiding Questions for Common Core Review Panels*
- Link to Common Core Standards
- Frequently Asked Questions compiled by CCSSO*
- Graph of process created by CCSSO*
- Statement of support by DC Arts and Humanities Education Collaboration*
- Please contact Tamara Reavis at (202) 654-6100 or by email at tamara.reavis@dc.gov for further information or to share feedback.

* This document is presented in Portable Document Format (PDF). A PDF reader is required for viewing.
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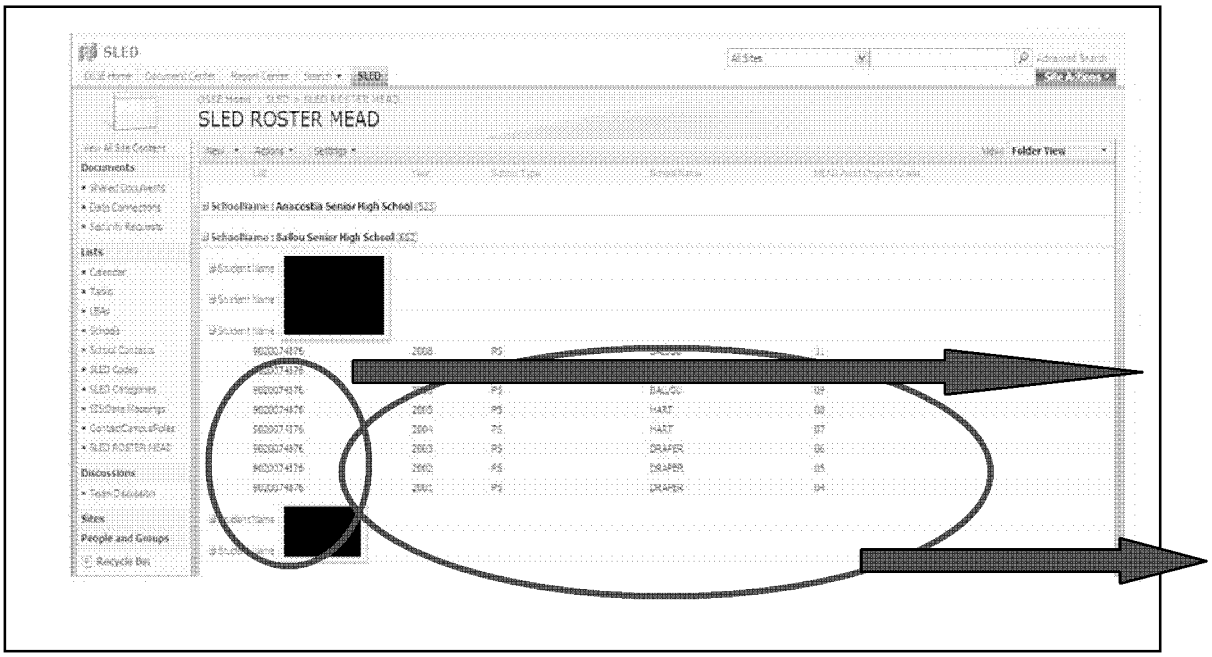
Internet 100%

start 10:28 AM

Appendix C1.1

Statewide Longitudinal Data System Screenshots

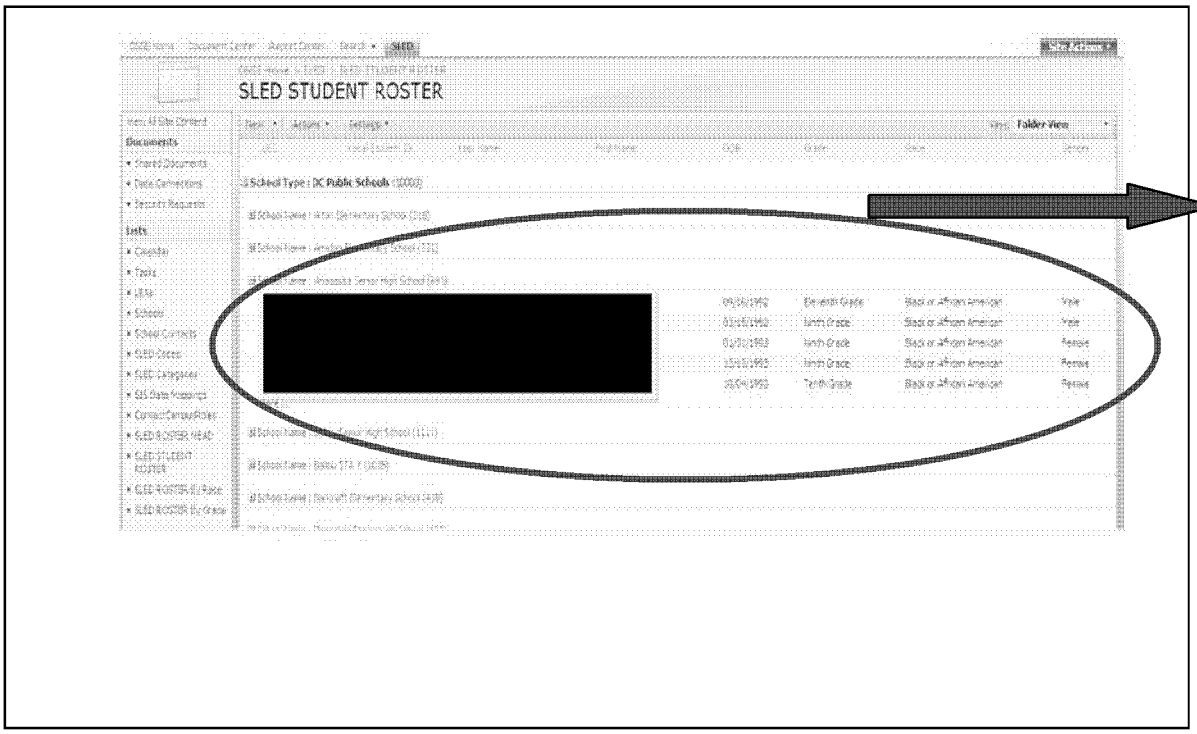
ACA Elements 1 & 3



Unique Student Statewide Identifier

Student-level information about the points at which students exit, transfer in, transfer out, drop-out or complete P-16 education programs

ACA Element 2



Student-level enrollment, demographic and program participation information

ACA Element 4

OSSE

Higher Education Financial Services and Preparatory Services

Invoices for Enrolled Students – Submitted by Institution

Capacity to communicate with higher education data systems

Invoice Summary

Program: DCTAG **Program Year:** 2009/2010 **Term:** Fall **Transaction Type:** Award

Invoice Status: In Process **Number of Days in Current Status:** 1
OSSE Contact Name: William Henderson **Invoiced Date:** 09/25/2009

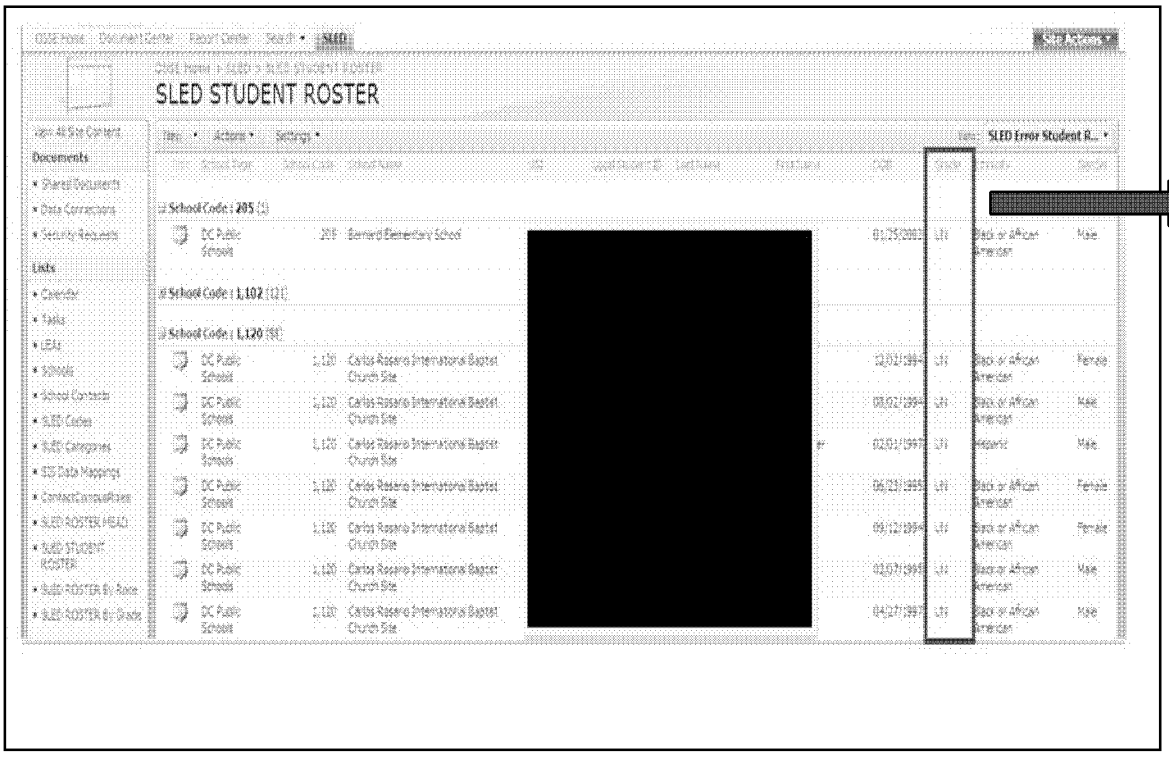
Institution Contact Name: Daniel Small
Institution Name: George Washington University
OPE ID: 00144400
TIN#: 530196584
DUNS#: 043990498

Institution Main Address:
Check Address: Student Financial Assistance
21211 Street NW, #318
Washington, DC 20052
Phone#: (202) 994-7850 **Fax#:** (202) 994-1210
Email: dsmall@gwu.edu

The following students are included in this Invoice.

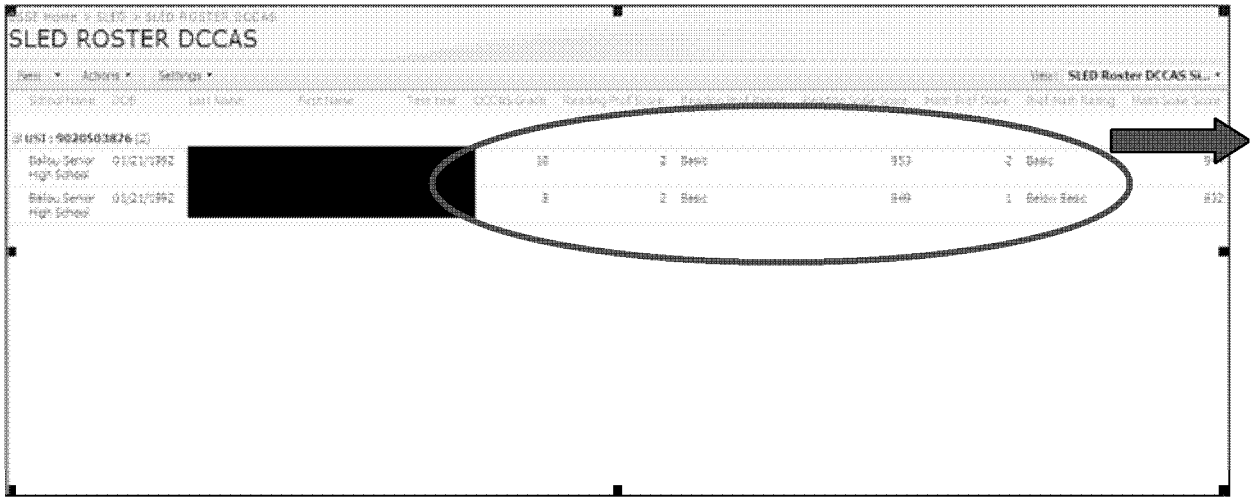
Ro Section	Approve	Reject	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Approved		[redacted]	[redacted]	Full-time	1250.00	1250.00		FY 2008 Carryover	09/25/2009
	Approved		[redacted]	[redacted]	Full-time	1250.00	1250.00		FY 2008 Carryover	09/25/2009
	Approved		[redacted]	[redacted]	Full-time	1250.00	1250.00		FY 2008 Carryover	09/25/2009
	Approved		[redacted]	[redacted]	Full-time	1250.00	1250.00		FY 2008 Carryover	09/25/2009
	Approved		[redacted]	[redacted]	Full-time	1250.00	1250.00		FY 2008 Carryover	09/25/2009
	Approved		[redacted]	[redacted]	Full-time	1250.00	1250.00		FY 2008 Carryover	09/25/2009
	Approved		[redacted]	[redacted]	Full-time	1250.00	1250.00		FY 2008 Carryover	09/25/2009
	Approved		[redacted]	[redacted]	Full-time	1250.00	1250.00		FY 2008 Carryover	09/25/2009
	Approved		[redacted]	[redacted]	Full-time	1250.00	1250.00		FY 2008 Carryover	09/25/2009
	Approved		[redacted]	[redacted]	Full-time	1250.00	1250.00		FY 2008 Carryover	09/25/2009
	Approved		[redacted]	[redacted]	Full-time	1250.00	1250.00		FY 2008 Carryover	09/25/2009
	Approved		[redacted]	[redacted]	Full-time	1250.00	1250.00		FY 2008 Carryover	09/25/2009
	Approved		[redacted]	[redacted]	Full-time	1250.00	1250.00		FY 2008 Carryover	09/25/2009

ACA Element 5



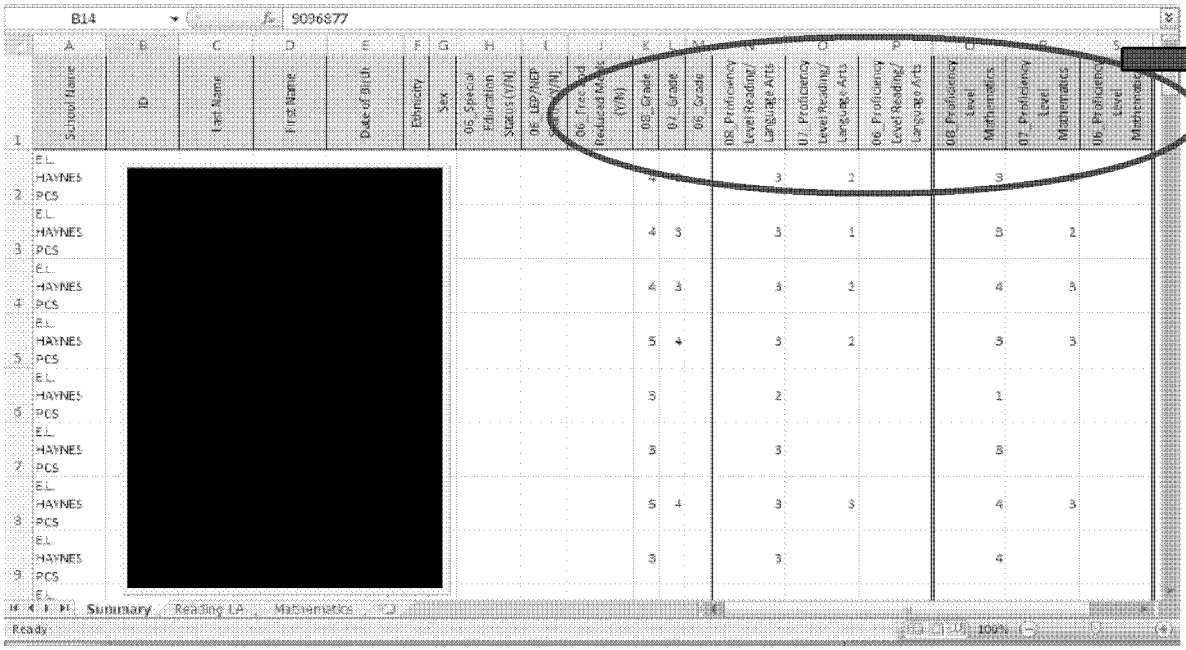
State data audit system to assess data quality, validity, and reliability

ACA Element 6



Yearly State assessment records of individual students

Or



Yearly State assessment records of individual students

ACA Element 7

OSSE DC Office of the State Superintendent of Education SLED

OSSE Home | Document Center | Report Center | Search | SLED

OSSE Home > SLED > Security Requests > SLED 2009 DC CAS Participation

Statewide Education Longitudinal DataWarehouse

2009 DC CAS Participation Report

	Reading	Math
Participated	32,033	32,122
Did Not Participate	995	906
Total Students	**33,028**	**33,028**
Did Not Participate Reason		
Medical Exemption	19	19
10th Grade Repeater	54	54
New to US - Exempt from Reading	114	0
Absent from School	808	833

Information on Students not Tested by Grade and Subject

ACA Element 11

OSSE

Higher Education Financial Servic
and Preparatory Servic

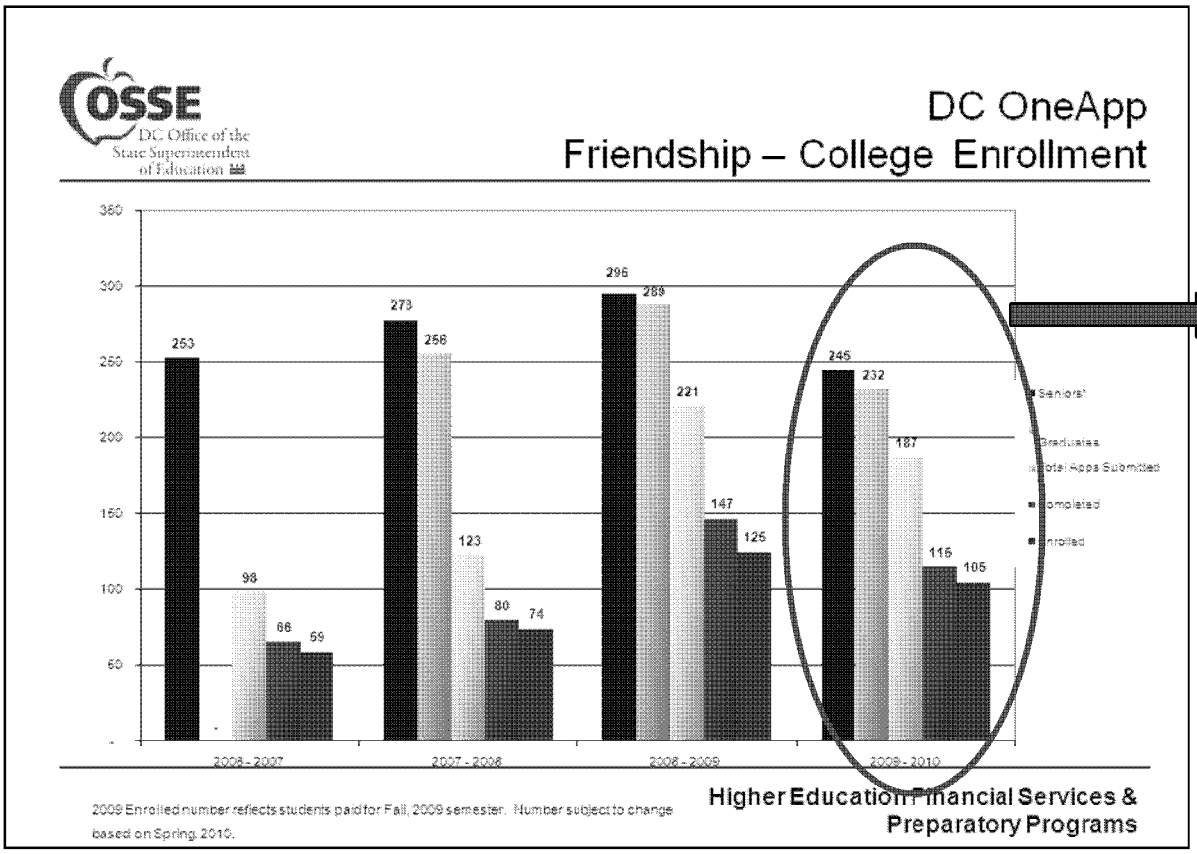
Enrollment Verification Chart (EVC) – Submitted by Institution
Lists all students enrolled

Page 1 of 3 1 2 3

[redacted]	[redacted]	Program Name	Status	Eligibility Status	Date Status Changed
		DC Adoption	Inactive	New	01/05/2010 12:30:11 PM
		DCLEAP	Inactive	New	01/05/2010 12:30:11 PM
		DCTAG	Inactive	New	01/05/2010 12:30:11 PM
		DCLEAP	Waiting List - On Time	New	01/06/2010 09:35:14 AM
		DCTAG	Eligible	New	01/06/2010 09:35:48 AM
		DCLEAP	Inactive	New	01/15/2010 11:45:28 AM
		DCLEAP	Eligible	New	01/24/2010 11:17:53 AM
		DCTAG	Eligible	New	01/24/2010 11:17:53 AM
		DCLEAP	Waiting List - On Time	Transfer	04/26/2010 09:58:11 AM
		DCTAG	Eligible	Transfer	04/26/2010 09:58:11 AM
		DCLEAP	Inactive	New	01/29/2010 10:49:35 AM
		DCTAG	Inactive	New	01/29/2010 10:49:35 AM
		DCLEAP	Waiting List - On Time	Transfer	04/13/2010 14:28:06 PM
		DCTAG	Eligible	Transfer	04/13/2010 14:28:06 PM
		DCLEAP	Waiting List - On Time	Transfer	04/13/2010 13:29:55 PM
		DCTAG	Eligible	Transfer	04/13/2010 13:29:55 PM
		DCLEAP	Inactive	New	02/06/2010 23:11:54 PM
		DCTAG	Inactive	New	02/06/2010 23:11:54 PM
		DCLEAP	Eligible	New	02/12/2010 13:26:47 PM
		DCTAG	Eligible	New	02/12/2010 13:26:47 PM
		DCLEAP	Eligible	New	02/15/2010 13:24:03 PM
		DCTAG	Eligible	New	02/15/2010 13:24:03 PM
		DCLEAP	Eligible	Transfer	04/19/2010 11:19:10 PM

Information regarding the extent to which students transition successfully from secondary to postsecondary school necessary to address alignment and adequate preparation for success in postsecondary education

ACA Element 12



Information deemed necessary to address alignment and adequate preparation for success in postsecondary education

Appendix D1.1

State-Approved Educator Preparation Programs

APPENDIX A
STATE APPROVED EDUCATOR PREPARATION PROGRAMS

ADMISSION AND PROGRAM STRUCTURE REQUIREMENTS

Program Structure

This post-baccalaureate, non-degree program is designed to accommodate post-college and mid-career applicants. Programs must have a minimum of 12 credit hours (180 contact hours), and last for a minimum of one (1) year. The contact hours may include pre and in-service coursework.

Field Experiences

Successful field experiences require forging a strong partnership with schools and other institutions. Candidates must be placed in pre-service practice prior to taking on lead teaching responsibilities. Programs are required to offer a hands-on, student-based field experience. It is also required that programs provide at least one-year of intensive mentoring for candidates. The state requires programs to provide solid mentoring to candidates with intensive front-loaded contact and support for the first eight weeks of employment and ongoing mentoring throughout the first year.

Admissions

Programs demonstrate highly selective admissions criteria. Multiple-route educator preparation programs allow for diverse admissions criteria, such as evidence of successful work experience. The table below shows the grade point average requirements for program entry.

Minimum Undergraduate Grade-point-average	Successful Work Experience
3.0	Less than 5 years
3.25 last 60 hours	
3.25 in subject courses	
2.75	5 to 10 years
2.5	More than 10 years

The minimum grade-point-average standards above are subject to minor changes to accommodate candidates with exceptional qualifications.

In addition, teacher candidates must successfully complete the Praxis I: Pre-Professional Skills Test and Praxis II – Content assessment (where applicable) prior to taking on responsibilities as the teacher of record.

APPENDIX B
STATE APPROVED EDUCATOR PREPARATION PROGRAMS

ORGANIZATIONAL STANDARDS AND INDICATORS

Institutions and Organizations seeking State Approval for programs which prepare and result in the recommendation of candidates for teacher or school administrator licensure shall be required to demonstrate that they meet the following organizational standards. The Standards below are an adapted version of the 2007 Professional Standards of the National Council for the Accreditation of Teacher Education.

Standard 1: ***Candidate Knowledge, Skills, and Professional Dispositions***

Candidates preparing to work in schools as teachers or other school professionals know and demonstrate the content knowledge, pedagogical content knowledge and skills, pedagogical and professional knowledge and skills, and professional dispositions necessary to help all students learn. Assessments indicate that candidates meet professional and state standards.

Description	Indicator
1a. Pedagogical Content Knowledge and Skills for Teacher Candidates	Teacher candidates: • Know the content that they plan to teach • Can explain important principles and concepts delineated in professional and state standards. • Understand the relationship of content and content-specific pedagogy delineated in professional and state standards. • Have a broad knowledge of instructional strategies that draws upon content and pedagogical knowledge and skills delineated in professional and state standards to help all students learn. • Facilitate student learning of the content through presentation of the content in clear and meaningful ways and through the integration of technology. • Are able to select and use a broad range of instructional strategies and technologies that promote student learning and are able to clearly explain the choices they make in their practice.
1b. Professional and Pedagogical Knowledge and Skills for Teacher Candidates	Teacher candidates: • Can apply the professional and pedagogical knowledge and skills delineated in professional, state, and institutional standards to facilitate learning.

	• Have a thorough understanding of and consider the school, family, and community contexts in which they work and the prior experience of students to develop meaningful learning experiences. • Know major schools of thought about schooling, teaching, and learning. • Are able to analyze educational research findings and incorporate new information into their practice as appropriate. • Reflect on their practice and are able to identify their strengths and areas of needed improvement. • Engage in professional activities. • Collaborate with members of the professional community to create meaningful learning experiences for all students. • Are aware of current research and policies related to schooling, teaching, learning, and best practices. • Are able to analyze educational research and policies and can explain the implications for their own practice and for the profession.
1c. Student Learning for Teacher Candidates	Teacher candidates: • Assess and analyze student learning, make appropriate adjustments to instruction, and monitor student progress. • Focus on student learning. • Are able to develop and implement meaningful learning experiences for students based on their developmental levels and prior experience. • Analyze student, classroom, and school performance data and make data driven decisions about strategies for teaching and learning so that all students learn. • Are aware of and utilize school and community resources that support student learning.
1d. Knowledge and Skills for Other School Professionals	Candidates for other professional school roles have an adequate understanding of the knowledge expected in their fields and delineated in professional, state, and institutional standards. Candidates: • Know their students, families, and communities; • Use data and current research to inform their practices;

	• Use technology in their practices; • Support student learning through their professional services. Know and implement 'No Child Left Behind' requirements.
1e. Student Learning for Other School Professionals	Candidates: • Are able to create positive environments for student learning. • Understand and build upon the development levels of students with whom they work; the diversity of students families and communities; and the policy contexts within which they work.
1f. Professional Dispositions for All Candidates	Candidates: • Demonstrate classroom behaviors that are consistent with the ideal of fairness and the belief that all students can learn. • Work with students, families, colleagues and communities reflect these professional dispositions.

Standard 2: ***Assessment System and Organization Evaluation*** *The organization has an assessment system that collects and analyzes data on applicant qualifications, candidate and completer performance, and organization operations to evaluate and improve the performance of candidates, the organization, and its programs.*	
Description	**Indicator**
2a. Assessment System	The organization has: • An assessment system that reflects the overall organization's design and vision, and professional and state standards. • A system that includes comprehensive and integrated assessment and evaluation measures to monitor candidate performance and manage and improve the organization's operations. • Taken effective steps to eliminate bias in assessments and is working to establish the fairness, accuracy, and consistency of its assessment procedures and organization's operations. Decisions about candidate performance are based on multiple assessments at admission into programs, appropriate transition points, and program completion.
2b. Data Collection, Analysis, and Evaluation	The organization: • Maintains an assessment system that provides regular and comprehensive information on applicant qualifications, candidate proficiencies, effectiveness of completers, organization's operations, and program quality. • Uses multiple assessments from internal and external sources, and collects data from applicants, candidates, completers, faculty, and other members of the professional community. Assessment data are regularly and systematically collected, compiled, aggregated, summarized, and analyzed to improve candidate performance, program quality, and organization's operations. • Maintains records of formal candidate complaints and documentation of their resolution. • Maintains its assessment system through the use of

	information technologies appropriate to the size of the program and organization/institution.
2c. Use of Data in Organizational Improvement	The organization: • Regularly and systematically uses data, including candidate and completer performance information, to evaluate the efficacy of its courses, programs, and field experiences. • Analyzes program evaluation and performance assessment data to initiate changes in programs and organization operations. Faculty has access to candidate assessment data and/or data systems. Candidate assessment data are regularly shared with candidates and faculty to help them reflect on and improve their performance and programs.

Standard 3: *Field Experiences*

The organization and its school partners design, implement, and evaluate field experiences and clinical practice so that teacher candidates and other school professionals develop and demonstrate the knowledge, skills, and professional dispositions necessary to help all students learn.

Description	Indicator
3a. Collaboration between Organization and LEA/School Partners	The organization program and its school partners: • Design, deliver, and evaluate field experiences and clinical practice to help candidates develop their knowledge, skills, and professional dispositions. • Jointly determine the specific placement of teachers and interns for other professional roles to provide appropriate learning experiences. • Share expertise to support candidates' learning in field experiences and clinical practice.
3b. Design, Implementation, and Evaluation of Field Experiences and Clinical Practice	Candidates participate in field experiences that: • Facilitate candidates' development as educators by providing opportunities for candidates to observe in schools and other agencies, tutor students, and participate in other educationally-related community events, such as interacting with families of students, attending school board meetings, and assisting teachers or other school professionals. • Analyze P–12 student learning, and reflect on their practice in the context of theories on teaching and learning. • Reflect the organization's overall design and vision and help candidates continue to develop the content, professional, and pedagogical knowledge, skills, and professional dispositions delineated in standards. • Engage in structured activities related to the roles for which they are preparing. These activities involve the analysis of data, the use of technology and current research, and the application of knowledge related to students, families and communities. • Allow candidates to participate as teachers or other professional educators, as well as learners in the school setting.

	• Is sufficiently extensive and intensive for candidates to develop and demonstrate proficiencies in the professional roles for which they are preparing and/or employed. Field Experience Supervisors • Use multiple measures and multiple assessments to evaluate candidate skills, knowledge, and professional dispositions in relation to professional and state standards. • Provide regular and continuing support for teachers and interns in conventional and distance learning programs through such processes as observation, conferencing, group discussion, email, and the use of other technology. • Are clear and known to all of the involved parties. • Are accomplished professionals who are prepared for their roles as mentors and supervisors. • Have schedules with the capacity to accommodate an intensive mentoring program.
3c. Candidates' Development and Demonstration of Knowledge, Skills, and Professional Dispositions To Help All Students Learn	Candidates: • Are assessed using multiple strategies to evaluate their performance and impact on student learning. • Have time for reflection and include feedback from peers and field experience supervisors. • Collect and analyze data on student learning, reflect on their work, and develop strategies for improving learning. • Participate in field experiences that include students with exceptionalities and students from diverse ethnic/racial, linguistic, gender, and socioeconomic groups. Field Experience Supervisors, Program and School-Based Staff: • Jointly conduct assessments of candidate performance throughout clinical practice. • Systematically examine results related to P–12 learning, using a process of continuous assessment, reflection, and action directed at supporting P–12 student learning.

Standard 4: *Diversity*

The organization designs, implements, and evaluates curriculum and provides experiences for candidates to acquire and demonstrate the knowledge, skills, and professional dispositions necessary to help all students learn. Assessments indicate that candidates can demonstrate and apply proficiencies related to diversity. Experiences provided for candidates include working with diverse populations, including P-12 school faculty, candidates, and students in P–12 schools.

Description	Indicator
4a. Design, Implementation, and Evaluation of Curriculum and Experiences	The organization clearly articulates proficiencies related to diversity that candidates are expected to develop. Curriculum and field experiences provide a well-grounded framework for understanding diversity, including English language learners and students with exceptionalities. Candidates: • Are aware of different learning styles and adapt instruction or services appropriately for all students, including linguistically and culturally diverse students and students with exceptionalities. • Connect lessons, instruction, or services to students' experiences and cultures. • Communicate with students and families in ways that demonstrate sensitivity to cultural and gender differences. • Incorporate multiple perspectives in the subject matter being taught or services being provided. • Develop a classroom and school climate that values diversity. • Demonstrate classroom behaviors that are consistent with the ideas of fairness and the belief that all students can learn. Proficiencies related to diversity are assessed, and the data are used to provide feedback to candidates for improving their knowledge, skills, and professional dispositions for helping students from diverse populations learn.

4b. Experiences Working with Diverse Faculty	Candidates: • Interact with faculty, both male and female, from at least two ethnic/racial groups. • Work with Faculty in professional education classes and clinical practice have knowledge and experiences related to preparing candidates to work with diverse student populations, including English language learners and students with exceptionalities. Affirmation of the value of diversity is shown through good-faith efforts to increase or maintain faculty diversity.
4c. Experiences Working with Diverse Candidates	Candidates: • Engage with other male and female candidates from different socioeconomic groups, and at least two ethnic/racial groups. • Work together on committees and education projects related to education and the content areas. Affirmation of the value of diversity is shown through good-faith efforts the organization makes to increase or maintain a pool of candidates, both male and female, from diverse socioeconomic and ethnic/racial groups.
4d. Experiences Working with Diverse Students in P–12 Schools	Candidates: • Have field experiences that provide experiences with male and female P–12 students from different socioeconomic groups and at least two ethnic/racial groups. • Also work with English language learners and students with disabilities during some of their field experiences to develop and practice their knowledge, skills, and professional dispositions for working with all students. • Receive feedback from peers and supervisors to help candidates reflect on their ability to help all students learn.

Standard 5: Faculty Qualifications, Performance, and Development *Faculty are qualified and model best professional practices, including the assessment of their own effectiveness as related to candidate performance; they also collaborate with colleagues. The program systematically evaluates faculty performance and facilitates professional development.*	
Description	**Indicator**
5a. Qualified Faculty	Professional education faculty have expertise that qualifies them for their assignments. Faculty have: • Previous experience with similar educator preparation program instruction and professional development. • Appropriate educational background, relevant licenses or certifications. • Professional teaching experience in a variety of settings. • Professional teaching experience in the setting and content area directly relevant to the subject area for which candidates are being prepared. Other professional experiences that promote and reward qualities necessary for educators: working successfully with people of wide ranging skills and backgrounds; being well-prepared but also able to improvise and respond; and collaborating with others.
5b. Modeling Best Professional Practices in Teaching	Professional education faculty have a thorough understanding of the content they teach. Teaching by professional education faculty includes: • Helping candidates develop the proficiencies outlined in the state standards. • Guiding candidates in the application of research, theories, and current developments in their fields and in teaching. • Encouraging candidates' development of reflection, critical thinking, problem solving, and professional dispositions. Professional education faculty: • Value candidates' learning and assess candidate performance.

	• Use a variety of instructional strategies that reflect an understanding of different learning styles. • Integrate diversity and technology throughout their teaching. • Assess their own effectiveness as teachers, including the positive effects they have on candidates' learning and performance.
5c. Modeling Best Professional Practices in Service	Most professional education faculty: • Provide service to the broader community in ways that are consistent with the organization's mission. • Collaborate with the professional world of practice in P–12 schools and with colleagues to improve teaching, candidate learning, and the preparation of educators. • Are actively involved in professional associations or provide community or education-related services.
5d. Organization Evaluation of Professional Education Faculty Performance	The organization conducts: • Systematic and comprehensive evaluations of faculty teaching performance to enhance the competence and intellectual vitality of the professional education faculty. • Evaluations of professional education faculty are used to improve the faculty's teaching, scholarship and service.
5f. Organization Facilitation of Professional Development	Based upon needs identified in faculty evaluations, the organization provides opportunities for faculty to develop new knowledge and skills, especially as they relate to emerging practices.

Standard 6: *Organization* ***Governance and Resources*** *The organization has the leadership, authority, budget, personnel, facilities, and resources, including information technology resources, for the preparation of candidates to meet professional and state standards.*	
Description	**Indicator**
6a. Organization Leadership and Authority	The organization: • Adequately plans, delivers, and operates coherent programs of study. • Effectively manages or coordinates all programs so that candidates are prepared to meet standards. Incorporates multiple perspectives in the subject matter being taught or services being provided. • Produces academic calendars, catalogs, publications, grading policies, and advertising are accurate and current.
6b. Organization Budget	The Organization ('s): • Budget supports pre-service work essential for preparation of professional educators. • Projected budgets are reasonable, consistent with similar programs, and apply realistic projections for sources and uses of funds. • Budgetary and fiscal operations are consistent with generally accepted accounting practices and employ effective internal controls. • Has a track record of solid financial performance.
6c. Personnel	The Organization ('s): • Workload policies allow faculty members to be effectively engaged in teaching, assessment, collaborative work in P–12 schools, and service. • Work together on committees and education projects related to education and the content areas. • Provides an adequate number of support personnel so that programs can prepare

	candidates to meet standards. • Provides adequate resources and opportunities for professional development of faculty.
6d. Organization's Facilities	The Organization: • Has adequate campus and school facilities to support candidates in meeting standards.
6e. Organization's Resources including Technology	The Organization: • Allocates resources across programs (where applicable) to prepare candidates to meet standards for their fields. • Has adequate information technology resources to support faculty and candidates. • Professional educational faculty and candidates have access both to sufficient and current library and curricular resources and electronic information, including resources available within surrounding community and through partners.

Appendix D1.2

DCMR Professional Education Requirements

District of Columbia Municipal Regulations (DCMR) Title 5, Chapter 16: Professional Education Requirements

Teachers, Section 1601.11: candidates for alternative preparation begin teaching under a Regular I Credential, a 2-year non-renewable credential available to candidates who:

1. have earned a bachelor's degree from an accredited institution of higher education;
2. are enrolled in a preparation program in the District of Columbia for practicing teachers approved by OSSE (such as those that meet the requirements above), or in a program approved by another state and recognized by OSSE;
3. have met qualifying scores on the Praxis I examination or another state-approved basic skills test (e.g., SAT, ACT, GRE);
4. have met qualifying scores on the Praxis II content examination or another state-approved content test in the content area of certification; and
5. are employed by a LEA in the District of Columbia (DCMR 1601.3). Once a teacher candidate has completed the teacher preparation program and has (where applicable) met qualifying scores on the Praxis II pedagogy examination or another state-approved test of pedagogy, the candidate becomes eligible for an upgrade to a four-year Regular II Teaching Credential (DCMR 1601.4), the standard license for all program completers whether traditional or alternate. All teachers who serve in DCPS are required to be licensed, while teachers in the state's public charter schools are exempt from this requirement.

Administrators, Section 1667.3: Like the teaching regulations, these regulations were also overhauled in 2008 and support alternatively prepared principals and assistant principals. To qualify for an Administrative Services Credential, a candidate must have

1. earned an advanced degree from an accredited institution of higher education or successfully completed the initial licensure requirements of a program for educational administrators approved by OSSE;
2. successfully completed two years of P-12 school-based experience, be it teaching or in the fields of counseling, social work psychological services, or rehabilitative services, or other educational leadership experience; and
3. met qualifying scores on the School Leaders Licensure Assessment

OSSE has developed policies related to objective and verifiable standards for the approval, renewal and revocation of approval for programs for all educators – including principals - in the District of Columbia.

Appendix D1.3

Alternative Preparation Programs

Teachers Enrolled in Alternative Preparation Programs by Subject Area, SY 2009-2010

Content Area	Program			
	TNTP/DCTF	Center for Inspired Teaching	Teach for America	Total
Science	12			12
English	16	6		22
Math	14		27	41
ESL	8			8
ECE	5	5	30	40
Elementary	22	8	17	47
Special Education	38		64	102
Total for SY09-10	**115**	**19**	**138** (plus 50 @ American U.)	**272**

TNTP's DC Practitioner Program (DCPTP) is the certification provider for the program's DC Teaching Fellows in all subjects except art. TNTP's pre-service institute is a mainstay of the organization's alternate certification programs. The curriculum for the institute is based on a framework called Teaching for Student Achievement (TfSA), which grew out of research on the experiences of TNTP teachers in high-need schools and the empirical research about effective classroom instruction. TNTP works with districts and states to focus on the certification of teachers for school districts' highest-need subject areas. The organization also utilizes a proprietary applicant-tracking system (TeacherTrack) to monitor new teachers' progress toward certification. Though the TNTP relationship with DC has been longstanding, with the new alternate certification approval, participants can now earn full state certification by completing TNTP's Teaching for Results content seminar series, successfully completing a year of full-time teaching and participating in DC mentorship programs.

Teach For America (TFA) recruits outstanding recent college graduates from all backgrounds and career interests to commit to teach for two years in urban and rural public schools. TFA provides the training and ongoing support necessary to ensure their success as teachers in low-income communities. The mission of TFA teachers, also called corps members, is to go above and beyond traditional expectations to lead their students to significant academic achievement, despite the challenges of poverty and the limited capacity of the school system. As part of their training, TFA corps members attend a rigorous five-week summer training institute and throughout the year engage in practice, observation, coaching, and study — as well as careful planning and thoughtful reflection — in order to develop the foundational knowledge, skills, and mindsets needed to be highly effective beginning teachers. TFA has been partnering with Washington, DC, since 1992, but its corps members were formerly required to be certified through partnerships with institutions of higher education. TFA will now be able to directly

certify its DC teachers in the areas of math, early childhood education, elementary education, and special education.

Center for Inspired Teaching (CIT) is a new partner with DC as of 2009. CIT will certify teachers in the areas of: Early Childhood (PreK - 3), Elementary (1-6), and English Language Arts (7-12). The program offers a 15-month state-approved teacher certification program including, among other benefits, summer pre-service coursework, hands-on teaching experience with children, ongoing coursework and regular visits from a mentor throughout the first year of teaching.

New Leaders for New Schools (New Leaders) has trained and supported 103 school leaders in Washington, DC - in both DCPS and DC Charter Schools. A total of 72 principalships (30 Charter, 42 DCPS) and 30 assistant principalships (10 Charter, 20 DCPS) have been held by New Leaders. New Leaders for New Schools is focused on providing leaders prepared to lead in "shortage areas" for the principalship: schools in urban areas that are in significant need of improvement or are designated "turnaround" schools. The 09-10 cohort is the first to be certified through an alternate route; previously, certification was granted through a partnership with Trinity University. New Leaders prepares principals according to the characteristics of an alternative preparation program. Selective criteria include the state-required GPA and work experience minimums. New Leaders is based on a residency model, in which trainees are placed in schools to have school-based leadership experiences and mentoring by a veteran principal. Foundations is the year-long, intensive academic core of the New Leaders program, which is designed to equip residents with a comprehensive toolkit of knowledge and skills necessary to successfully lead and manage an urban public school.

Appendix D2.1

IMPACT Overview

Dear DCPS Community,

As a direct result of your diligence and commitment to excellence, DCPS has made dramatic student achievement gains over the past two years. Since 2007, our elementary students have increased 11 percentage points in reading proficiency and 20 percentage points in math. Our secondary students have also made dramatic gains: 11 percentage points in reading and 13 percentage points in math. Your collective hard work on behalf of our students has been *the* critical component in making these gains possible.

While we celebrate these achievements, we know that there is still much work to be done. Slightly more than half of our elementary children are still below grade level in both reading and math. The same is true of nearly 60% of our secondary students. We cannot rest until every child in our school system is achieving at the highest levels. As a DCPS community, we believe that we have both the power and the responsibility to overcome the obstacles that stand in the way of our success. In particular, we are motivated by a commitment to ensure that the gap in achievement that separates District of Columbia children by race, class, language of origin, and special education status is eliminated once and for all.

Research and experience tell us that the most important factor impacting our ability to close the achievement gap and increase student learning is *you*: the adults who serve our students each and every day. Recognizing the unparalleled importance of ensuring that talented and committed individuals are serving our students, we have developed IMPACT, the new DCPS effectiveness assessment system for school-based personnel.

We decided to call this new system "IMPACT" because each of you has a dramatic *impact* on the lives of the children in our nation's capital. Through IMPACT, we seek to create a culture in which DCPS school-based personnel have a clear understanding of what defines excellence in their work, are provided with constructive and data-based feedback about their performance, and receive support to increase their effectiveness.

IMPACT is the culmination of over a year's worth of research and design informed by extensive guidance and feedback from the DCPS community. Critical to the development process were over 40 question and answer sessions and over 50 focus groups that we held with school-based personnel. I want to extend my deep appreciation to the more than 500 members of the DCPS community who provided honest and thoughtful feedback in all of these sessions. Your guidance was invaluable.

Thank you again for your commitment to the children of the District of Columbia. You are the most important element of our reform agenda and the key to closing the achievement gap in the nation's capital. Please know that I am humbled by the work you do each and every day on behalf of our students.

Sincerely,
Michelle Rhee
Chancellor, District of Columbia Public Schools

Putting Growth First

How does IMPACT support my growth?
The primary purpose of IMPACT is to help you increase your effectiveness so that, as a system, we can dramatically increase student learning. IMPACT does this in three important ways.

- Clear Expectations — First and foremost, IMPACT attempts to outline clear performance expectations. We have worked very closely with teachers and other school-based personnel over the past year to draft clear rubrics for each of your IMPACT components. We wanted to ensure that performance expectations were transparent. As many of you voiced in the focus groups we held on the new assessment system: "Please tell me exactly what you expect."
- Clear Feedback — We also wanted you to have clear feedback about your performance. Towards that end, IMPACT does three things. First, as you will see in this guidebook, IMPACT has multiple assessment "cycles" over the course of the year, thereby providing multiple opportunities for feedback. Second, IMPACT calls for in-person assessment conferences as part of each cycle. And third, IMPACT is web-based. You will be able to log into the system at any time to review your ratings as well as written feedback about your performance.
- Clear Growth Plans — Finally, we felt it was important for all school-based personnel at all levels of experience and expertise to receive guidance on how to increase their effectiveness. Thus, as part of IMPACT, everyone will have a growth plan. The growth plan, initiated after the first assessment cycle, will outline key strengths and key growth areas as well as next steps for professional development.

What are the school system's plans for professional development?
Professional development is vital to our collective success. We want our schools to be true learning environments, for children and adults alike. This is why we are working aggressively to provide you with the highest quality support.

To start, over the past two years, we have increased spending on professional development by over 400%. But it is how we are using these funds that matters the most. We are investing in what the research tells us actually works: rigorous, job-embedded supports that help you address the unique challenges that you face. In short, we are moving aggressively away from the one-size-fits-all "seat hour" model towards the differentiated "practicum" model.

We know we still have far more work to do in this area, but are excited about the changes that we are already beginning to see in schools across the city. We ask for your continued participation in this reform effort. Getting professional development right is key to our goal of becoming one of the highest-performing school systems in America.

Group 1: Overview

Who is in Group 1?
Group 1 consists of all General Education Teachers for whom we can generate "value-added" data. Value-added is a sophisticated statistical measure of your impact on your students' achievement. To generate value-added data, we need both "before" and "after" DC CAS scores for your students. In other words, we need scores from before they entered your class as well as scores from after they spent a year learning with you.

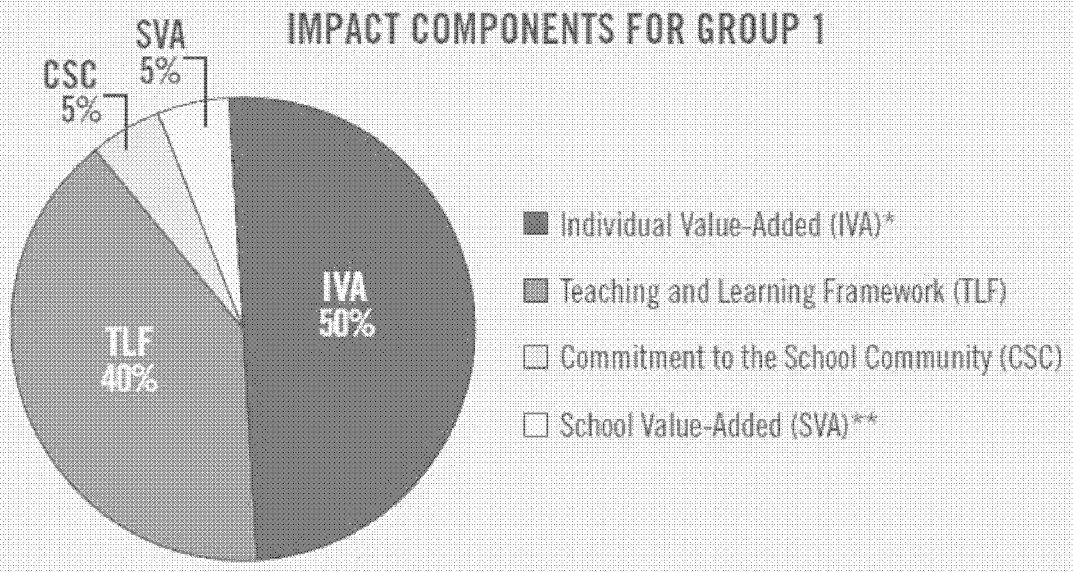
The only teachers in DCPS for whom we have both "before" and "after" DC CAS data are those who teach English or math in grades four through eight.

Even though we administer the DC CAS in the third and tenth grades, we cannot calculate value added data for teachers of these grades. This is because we have no "before" data for their students, as we do not test at the end of second grade or at the end of ninth grade.

Will DCPS be adding additional grades and subjects to the DC CAS to move more teachers into Group 1?
Yes. Over the next few years, we will be implementing developmentally appropriate standardized assessments for students in kindergarten, first grade, and second grade. We will also be adding end-of-course exams for secondary English, math, science, and social studies. As these assessments are rolled out, more teachers will be moved into Group 1.

What are the IMPACT components for members of Group 1?
There are five IMPACT components for members of Group 1. Each is explained in greater detail in the following sections of this guidebook.

- Individual Value-Added (IVA) — This is a sophisticated statistical measure of your impact on your students' achievement, as measured by the DC CAS. This component makes up 50% of your IMPACT score.
- Teaching and Learning Framework (TLF) — This is a measure of your instructional expertise. This component makes up 40% of your IMPACT score.
- Commitment to the School Community (CSC) — This is a measure of the extent to which you support your colleagues and your school's local initiatives. This component makes up 5% of your IMPACT score.
- School Value-Added (SVA) — This is a sophisticated statistical measure of your school's impact on student achievement, as measured by the DC CAS. This component makes up 5% of your IMPACT score.
- Core Professionalism (CP) — This is a measure of four basic professional requirements for all school-based personnel. This component is scored differently from the others, which is why it is not represented in the pie chart. For more information, please see the Core Professionalism section of this guidebook.



**If, for unanticipated technical reasons, Individual Value-Added (IVA) data cannot be generated for your class, you will be assessed as if you were part of Group 2.*

***If, for unanticipated technical reasons, School Value-Added (SVA) data cannot be generated for your school, the Commitment to the School Community component will expand to absorb the SVA portion of the pie.*

Individual Value Added (IVA)

What is value-added?
Value-added is a sophisticated statistical measure of how much you impact your students' learning over the course of the year. In DCPS, value-added is based on the DC CAS.

Is value-added the same as Adequate Yearly Progress (AYP)?
No. Adequate Yearly Progress is an "attainment" measure, meaning it is an absolute target that is required of all students, regardless of their current proficiency.

Value-added, on the other hand, is a "growth" measure. It is based on the gains that your students make, not whether they surpass an absolute target.

How does value-added work?
To explain value-added, it might be helpful to consider the following hypothetical scenario. Consider Teacher A, a seventh grade math teacher. Suppose that 50% of Teacher A's students were proficient on the math portion of the DC CAS at the end of sixth grade (before they entered Teacher A's class). Now suppose that 60% were proficient at the end of seventh grade (after they had spent a year in Teacher A's class). The change in proficiency for Teacher A's students would be 10 percentage points (50% to 60%).

Now let us consider Teacher B, another seventh grade math teacher. Just like Teacher A's students, suppose that 50% of Teacher B's students were proficient in math at the end of sixth grade (before they entered Teacher B's class). But let us suppose that 65% were proficient at the end of seventh grade (after they had spent a year in Teacher B's class). The change in proficiency for Teacher B's students would be 15 percentage points (50% to 65%).

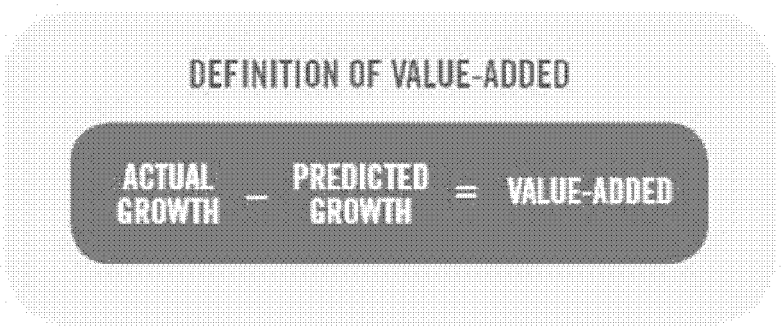
Which teacher was more successful? Teacher B's students grew more so we might be inclined to say that s/he was the more successful educator.

But what if *none* of Teacher B's students qualified for free or reduced price lunch, received special education services, or were English Language Learners? And what if *all* of Teacher A's students qualified for free or reduced price lunch, received special education services, and were English Language Learners?

Value-added attempts to address this complicated scenario by "controlling for," or taking into account, certain data about your students (e.g., the percentage who qualify for free or reduced price lunch). It does this by creating a "predicted growth" for each class of students. Each growth prediction is different as it depends on the characteristics of your own students.

To determine value-added, the predicted growth is compared against your students' "actual growth." The actual growth is simply how much they *actually* gained from one year to the next on the DC CAS. The difference between the predicted growth and the actual growth is the value-

added measurement. High value-added teachers are those whose students' actual growth exceeds their predicted growth.*



*As explained in the following pages, value-added is based on students' scale scores, not their proficiency levels. The example above is for illustrative purposes only.

How is the predicted growth calculated?
To explain the predicted growth, we first need to discuss two different kinds of information that are related to student learning.

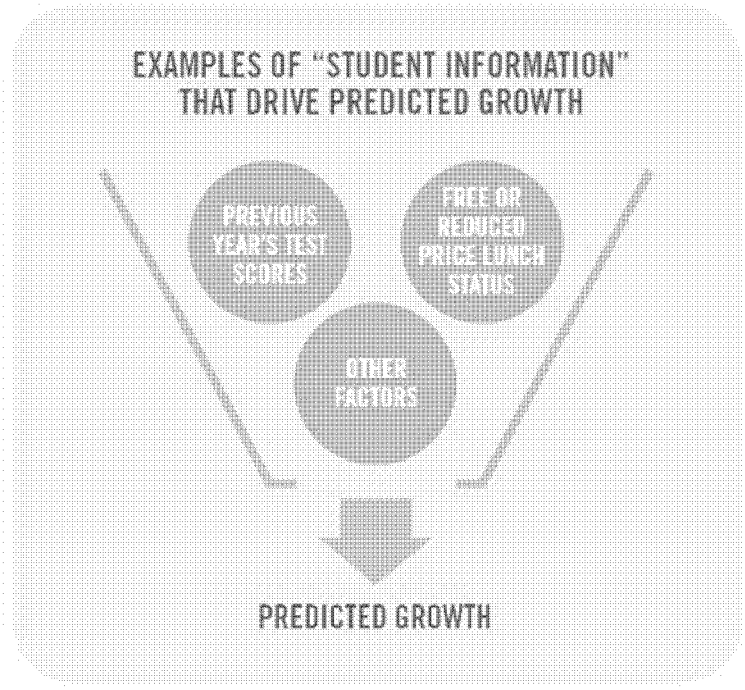
Let us call the first type of information "Student Information." This refers to measurable characteristics of your students that, on average, are related to student learning, but that you do not directly control as a classroom teacher. Included in this category are your students' test scores from the previous year, their free or reduced price lunch status, their special education status, their English Language Learner status, and other similar factors.

The second type of information, "Teacher Information," refers to all the things that are related to student learning that you do directly control as a classroom teacher. Included in this category are your instructional expertise, the rigor of your lessons, the expectations you set for your students, the degree to which you communicate with your students' families about your instruction, and other related factors.

"STUDENT INFORMATION" VS. "TEACHER INFORMATION"

EXAMPLES OF "STUDENT INFORMATION"	EXAMPLES OF "TEACHER INFORMATION"
■ Previous Year's Test Scores ■ Free or Reduced Price Lunch Status ■ Special Education Status ■ English Language Learner Status	■ Instructional Expertise ■ Rigor of Lessons ■ Ambitiousness of Expectations for Student Learning ■ Extent of Efforts to Communicate with Students' Families

The predicted growth for your students is calculated based on their "Student Information." At the end of the year, we calculate the average performance of students whose "Student Information" is just like that of the young people in your own class. That average is the predicted growth.



Let us suppose, for example, that you teach fifth grade and that you have 25 students. Suppose that 40% of your students were proficient on the DC CAS last spring, that 80% qualify for free or reduced price lunch, that 25% receive special education services, and that 10% receive English Language Learner services.

Based on the DC CAS data from all of the students in the school system, we can calculate what the average performance was that year for a class composed of students just like yours. That is what we call the predicted growth. It is how we would predict your class to perform with the average teacher based on its "Student Information" alone.

How is the actual growth calculated?
The actual growth for your students is calculated by comparing their *actual* scores from the end of last year with their *actual* scores from the end of the current year. Let us suppose that, on average, your students exceeded their predicted growth. Your students likely did so because of your impact as their teacher. This is the "Teacher Information" that we discussed above.

If your students exceeded the predicted growth, you likely provided exceptional instruction, had incredibly rigorous lessons, set the highest of expectations, and went above and beyond to communicate with your students' families. In short, the "value you added" was substantial and led to growth that was higher than what was predicted, on average, for your students.

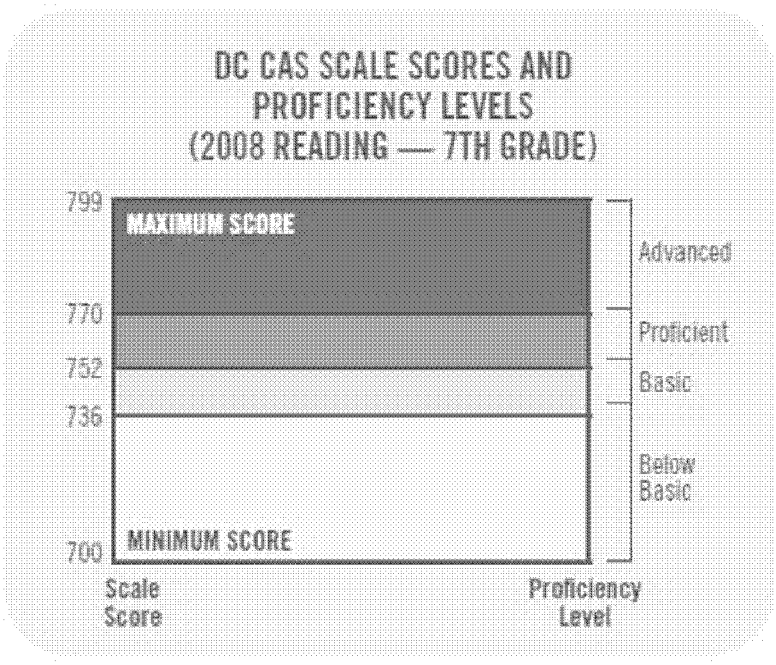
So how exactly does this work with the DC CAS?
Before going any further, it might be helpful to clarify a few points about the DC CAS. First, it is important to note the difference between "proficiency level" and "scale score." The proficiency levels on the DC CAS are Below Basic, Basic, Proficient, and Advanced. They are derived from the scale score.

Each grade has a scale score with a 100-point range. For example, the fourth grade scale score begins at 400 and ends at 499; the fifth grade scale score begins at 500 and ends at 599; and so on.

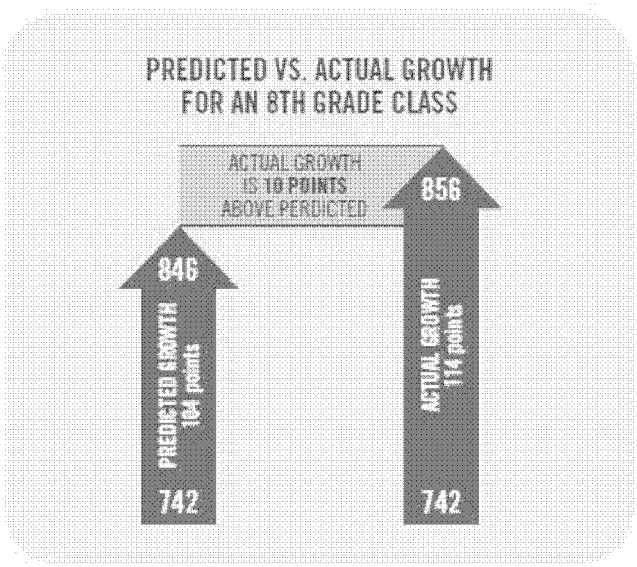
DC CAS SCALE SCORE RANGES

GRADE	MINIMUM SCALE SCORE	MAXIMUM SCALE SCORE
4	400	499
5	500	599
6	600	699
7	700	799
8	800	899

As noted above, the proficiency levels are created from the scale score. For example, in 2008, Below Basic in seventh grade reading was a scale score between 700 and 736. Basic was a scale score between 736 and 752, and so on. To determine value-added, we use the scale score, not the proficiency level.



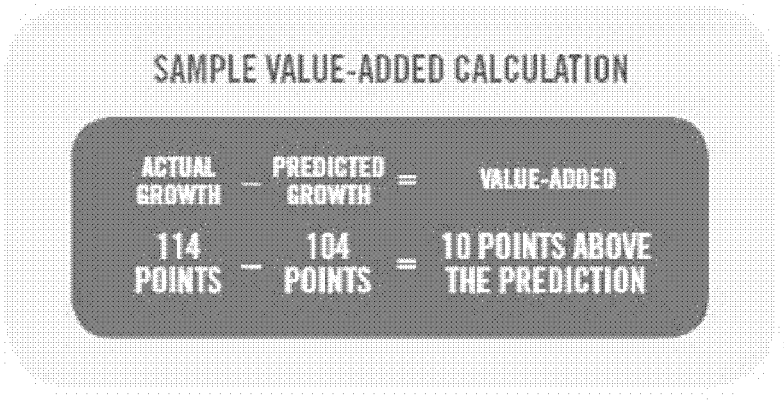
Now let us return to how we calculate a value-added score. Recall that we do so by comparing a class's average predicted growth with its average actual growth. Take a look at the example below for an eighth grade math teacher.



At the end of seventh grade (before these students entered this teacher's class), the class average was 742 points (on a scale of 700–799). The predicted growth (left arrow) for this class was 104 points, which would place it at 846 points (on a scale of 800 to 899) by the end of eighth grade.

The class's actual growth (right arrow) was 114 points, which actually placed the class at 856 points (on a scale of 800–899) at the end of eighth grade.

If we subtract the predicted growth (104 points) from the actual growth (114 points) we arrive at the teacher's value added: 10 points above the prediction.



Why are the proficiency levels not used in value-added?
The proficiency levels do not provide enough detail about a student's performance. A student could grow significantly, from 700 to 736 in scale score points, for example, but still be in the Below Basic category. We want to be more precise in assessing your impact on student performance. Using the scale scores to calculate value-added helps us do that.

What is a "good" value-added score?
We want to see value-added scores that are above the prediction. Such scores indicate teachers who are, on average, helping their students "beat the odds." From the school system's perspective, the value-added score of the hypothetical eighth grade math teacher we have been discussing (10 points above the prediction) is quite respectable.

Appendix D2.2

Questions for Growth Measure Task Force

Sample Questions for Growth Measure Task Force

- Is the student growth measure formula used in DCPS' IMPACT approach appropriate for charter schools?
- Who will do the calculation of charter growth?
    - Will OSSE support DCPS in building out its own infrastructure to include charters (so as not to reinvent the wheel?)
    - Will OSSE build capacity in-house to do the calculation for everyone? For charters only?
- Experts in the field note that roster validation is one of the most cumbersome components of using student growth data to inform teacher evaluation, because it is critical to ensure that teachers are evaluated based on students they actually taught.
    - As DC coordinates its approach across sectors, who will support the roster validation process?
- What will the denominator be for DCPS teachers, if charters are included in the calculation?
    - Will the consequences of IMPACT scores for DCPS teachers (see below) be based on their relation to all teachers in DC or just the teachers in DCPS?

Appendix E1.1

PCSB Letter of Support

DISTRICT OF COLUMBIA
PUBLIC CHARTER SCHOOL BOARD

January 13, 2010

Superintendent Kerri Briggs
Office of the State Superintendent of Education
Government of the District of Columbia
One Judiciary Square
441 4th Street NW
Suite 350N
Washington, DC 20001

Dear Superintendent Briggs,

On behalf of the DC Public Charter School Board (PCSB), I am pleased to express our support for the District of Columbia's Race to the Top Fund application. The application reflects support for the bold reforms currently underway in DC, including those within the charter school sector, which is working to provide students and parents across the city with quality public school options. The application also reflects the spirit of collaboration and innovation that has reinvigorated our reform efforts in the District, and I am pleased to have your commitment that we will continue down this path going forward.

As you know, the PCSB is committed to ensuring school quality. Our new Performance Management Framework ensures a process for holding accountable charter schools that do not meet a rigorous bar for quality in terms of academic and non-academic results for students. Consistent with our Framework, we will implement a plan for closure of any charter school on the list of "persistently lowest-achieving schools," as defined in the District's Race to the Top application.

In order to identify the schools that are persistently lowest-achieving, we will work with you and your office to review the criteria and to ensure that the appropriate definition and methodology are in place. We are committed to meeting the goals of turnaround in the Race to the Top application, and welcome the partnership with the Office of the State Superintendent in this endeavor.

The Public Charter School Board is pleased to be a part of the effort to transition DC to a system of high-achieving schools.

Sincerely,

Thomas A. Nida
Board Chair

3333 14th St., NW • Suite 210 • Washington, DC 20010 • Office 202-328-2660 • Fax 202-328-2661 • www.dcpubliccharter.com

Appendix E2.1

School Ranking Formula

Definition of Persistently Lowest-Achieving Schools

December 17, 2009

Issue

What criteria should the District of Columbia use to identify the persistently lowest-achieving schools, which are then singled out for significant reform (e.g., turnaround, closure, re-start, or transformation)?

Background

The Race to the Top, State Fiscal Stabilization Fund, and School Improvement Grant applications released by the U.S. Department of Education (USDE) all require the state to define the "persistently lowest-achieving schools." The applications use the following definition:

> Persistently lowest-achieving schools means, as determined by the state:
>
> (i) Any Title I school in improvement, corrective action, or restructuring that
>
> (a) Is among the lowest-achieving five percent of Title I schools in improvement, corrective action, or restructuring or the lowest-achieving five Title I schools in improvement, corrective action, or restructuring in the State, whichever number of schools is greater; or
>
> (b) Is a high school that has had a graduation rate as defined in 34 CFR 200.19(b) that is less than 60 percent over a number of years; and
>
> (ii) Any secondary school that is eligible for, but does not receive, Title I funds that
>
> (a) Is among the lowest-achieving five percent of secondary schools or the lowest-achieving five secondary schools in the State that are eligible for, but do not receive, Title I funds, whichever number of schools is greater; or
>
> (b) Is a high school that has had a graduation rate as defined in 34 CFR 200.19(b) that is less than 60 percent over a number of years.
>
> To identify the lowest-achieving schools, a state must take into account both
>
> (i) The academic achievement of the "all students" group in a school in terms of proficiency on the state's assessments under section 1111(b)(3) of the ESEA in reading/language arts and mathematics combined; and
>
> (ii) The school's lack of progress on those assessments over a number of years in the "all students" group.

There is only one secondary school in the District of Columbia that is eligible for but does not receive Title I funds (Roots PCS – in improvement year 1).

There are 173 Title I schools in the District of Columbia; 133 are identified for improvement. Five percent of all Title I schools identified for improvement is 7 schools. In the District of Columbia, 38 schools are implementing restructuring and 21 schools are planning for restructuring this year, (44 percent of all Title I schools identified for improvement).

Definition

The District needs to identify two types of schools:

- <u>Schools with graduation rates below 60 percent over a number of years</u>. There are 3 high schools (Anacostia, Eastern, and Luke Moore) with graduation rates below 60 percent in each of the past two years.
- <u>The lowest-achieving five percent of Title I schools identified for improvement</u>. To determine this group, the state should consider using only statewide criteria and making the definition clear and transparent.

A definition of persistently low achieving should include:

- The number of years the school has not made AYP.
- The overall growth in achievement in the school.
- The overall achievement level of the school, separate and apart from whether the school is improving achievement.

1. Improvement status. This measure assigns points based on the current year's improvement status.
   - This has the heaviest weight (50 points) because the measure incorporates a factor of persistence. For example, schools in restructuring have missed AYP for six years.
   - Schools receive:
     - 10 points if they are in improvement year 1;
     - 20 points if they are in improvement year 2;
     - 30 points if they are corrective action;
     - 40 points if they are in restructuring planning; or
     - 50 points if they are in restructuring implementation.
2. Overall growth. This measures the progress schools have made increasing their percentage of students scoring proficient or above.
   - This measure assigns points based on the change in the percentage of students scoring proficient or above on the DC CAS in the school overall from 2007 to 2009.
   - Schools receive 10 points each for reading and mathematics if there is a decrease from 2007 to 2009.
3. Distance from the AMO. This measure combines the overall low percentage of proficiency with a persistence factor.
   - Points are assigned based on the distance between the percentage of students scoring proficient or above and the annual measurable objective (AMO) used for AYP determinations. Schools are flagged if the percentage of students proficient or above is less than half the AMO.
   - Schools receive 5 points each for reading and mathematics if the percentage proficient is less than half the AMO for two consecutive years and 10 points for reading and mathematics if the percentage is less than half the AMO for three consecutive years.

Points would be given to schools based on their achievement in each of the categories. The persistently lowest achieving schools will have higher scores. OSSE would annually publish a ranking of all schools in the District of Columbia based on this scale.

If schools have identical point totals, the schools will be sorted based on the combination of the percentage of students scoring proficient and above in reading and mathematics in the most recent school year. For example, Prospect ranks above Bancroft because it had 4 percent proficient in reading and 3 percent proficient in mathematics in 2009 (7.6 percent total), compared with 38 and 47 percent, respectively, in Bancroft (85 percent total).

Appendix E2.2

History of School Turnarounds

School	Year of Turnaround	Turnaround Model
Eliot	2008	Turnaround
Shaw	2008	Turnaround
Stanton	2008	Turnaround
Truesdell	2008	Turnaround
Wheatley	2008	Turnaround
Hart	2009	Turnaround
MacFarland	2009	Turnaround
Oak Hill	2007	Restart
Anacostia	2009	Restart
Coolidge	2009	Restart
Dunbar	2009	Restart
Fletcher Johnson	2006	Closure
McGogney	2006	Closure
R.H. Terrell	2006	Closure
Shadd	2006	Closure
Van Ness	2006	Closure
Adams	2007	Closure
Backus ES	2008	Closure
Benning ES	2008	Closure
Bowen ES	2008	Closure
Browne Center	2008	Closure
Bunker Hill ES	2008	Closure
Clark ES	2008	Closure
Douglass Transition Academy	2008	Closure
Gage-Eckington ES	2008	Closure
Garnet- Patterson MS	2008	Closure
Gibbs ES	2008	Closure
Green ES	2008	Closure
Hine JHS	2008	Closure
J.F. Cook ES	2008	Closure
Merritt MS	2008	Closure
Meyer ES	2008	Closure
MM Washington Center	2008	Closure
MM Washington HS	2008	Closure
Moten Center	2008	Closure
P.R. Harris ES	2008	Closure
Park View ES	2008	Closure
Rudolph ES	2008	Closure
Slowe ES	2008	Closure
Spingarn Center	2008	Closure
Stevens ES	2008	Closure
Taft Center	2008	Closure
Wilkinson ES	2008	Closure
Young ES	2008	Closure

Birney ES	2009	Closure
Draper ES	2009	Closure
Colin L Powell	2006	Closure-charter
Jos-Arz	2006	Closure-charter
New School for Enterprise and Development	2006	Closure-charter
Sasha Bruce	2006	Closure-charter
Hope Academy	2007	Closure-charter
Colin Powell International	2008	Closure-charter
Tri-Community (Wm E Dorr)	2008	Closure-charter
Washington Academy	2008	Closure-charter
Academia Bilingue de la Comunidad (ABC) PCS	2009	Closure-charter
Barbara Jordan PCS	2009	Closure-charter
CityLights	2009	Closure-charter
MEI Futures	2009	Closure-charter
Ballou	2008	Transformation
Cardozo	2008	Transformation
Francis	2008	Transformation
Jefferson	2008	Transformation
Roosevelt	2008	Transformation
Sousa	2008	Transformation
Walker-Jones	2008	Transformation
Wilson	2008	Transformation
Bancroft	2009	Transformation
Garfield	2009	Transformation
Johnson	2009	Transformation
Kelly Miller	2009	Transformation
Spingarn	2009	Transformation
Total Schools Turned Around (04-05 to 09-10)	**71**	

Appendix F1.1

DC Cluster-Level Funding

DC BUDGET BY MAJOR FUNDING CATEGORY			
	FY08	**FY09**	
Education[1]	1,284,308,000	1,401,649,000	
Health and Human Services	1,541,417,000	1,598,864,000	
Government Direction and Support	337,173,000	361,397,000	
Public Works	409,248,000	451,135,000	
Public Safety	963,108,000	956,087,000	
Economic Development	241,755,000	269,075,000	
Financing and Other	990,832,000	925,884,000	
TOTAL	5,767,841,000	5,964,091,000	
EDUCATION BUDGET BREAKOUT[2]	**FY08**	**FY09**	
Elementary and Secondary	801,808,655	855,204,181	
Higher Education	62,569,786	62,070,000	
	14.99%	**15.38%**	
FUNDING PER STUDENT BY SUBGROUP DCPS	**FY07**	**FY08**	**FY09**
SPED	83884000 for 7825 students	76626000 for 7019 students	77,640,643 for 7019 students
ELLL	12547000 for 3920 students	13,169,000 for 3956 students	13,877,211 for 3508 students
FUNDING PER STUDENT BY SUBGROUP CHARTERS	**FY07**	**FY08**	**FY09**
SPED	25,904,347 for 2707 students	28,616,973 for 2819 students	29,297,479 for 2819 students
ELL	4,183,477 for 3201 students	5,903,115 for 1530 students	4,953,141 for 1412 students

1 Education Cluster includes Libraries, Office of Public Education Facilities Modernization, Non-Public Tuition, Special Education Transportation
Public Charter School Board, Teachers' Reitrement System, DC Public Schools, and DC Charter Schools

2 Local Funds for LEAs (DCPS plus DC Charter Schools)

Appendix F1.2

USPFF Allocation Chart

District of Columbia Public Schools FY 2010 Approved Budget
Per Pupil Funding Allocation Analysis
Uniform Per Student Funding Formula (D.C. Official Code § 38-29) & Local Funds Appropriations

UPSFF Foundation Level: $8,770 / student

	Weighting Factor	FY 2010 Budgeted Enrollment	Per Pupil Allocation (Rounded)		Total Budget (Rounded)
General Education					
Pre-School	1.34	1,519	$11,752	$	17,851,288
Pre-Kindergarten	1.30	2,494	$11,401	$	28,399,891
Kindergarten	1.30	3,337	$11,401	$	38,045,137
Grades 1-3	1.00	10,654	$8,770	$	93,435,580
Grades 4-5	1.00	6,383	$8,770	$	55,978,910
Ungraded Elementary	1.00	-	$8,770	$	-
Grades 6 -8	1.03	7,152	$9,033	$	64,604,016
Ungraded Middle/Jr. High School	1.03	-	$9,033	$	-
Grades 9 -12	1.16	11,595	$10,173	$	117,955,935
Ungraded Sr. High School	1.16	38	$10,173	$	386,574
Alternative	1.17	995	$10,261	$	10,209,695
Special Education Schools	1.17	141	$10,261	$	1,446,801
Adult/Other	0.75	-	$6,578	$	-
Subtotal for General Education				**$**	**428,348,030**
Total Budgeted Student Enrollment		**44,308**			
Special Education Add-On					
Level 1	0.52	1,346	$4,560	$	6,151,440
Level 2	0.79	2,116	$6,928	$	14,659,648
Level 3	1.56	696	$13,681	$	9,521,976
Level 4	2.83	1,666	$24,819	$	41,348,454
Subtotal for Special Education		**5,824**		**$**	**71,681,518**
Other Add-On Categories					
English Language Learner	0.45	4,272	$3,947	$	16,861,584
Summer School	0.17	5,872	$1,491	$	8,755,152
Summer School Special Education		-		$	852,414
Subtotal for Other Categories				**$**	**26,469,150**

Total UPSFF Funding **$ 526,498,698**

For FY 2010, the Uniform Per Student Funding, in the District of Columbia Public Schools agency budget is provided through two sources: $510,880,811 from Local funds, and $39,296,316 in Intra-District funds via the Office of the State Superintendent of Education, representing State Fiscal Stabilization grant funds received by the District under provisions of Public Law 111-5, the American Recovery & Reinvestment Act of 2009. Refer to Table 5.

Additional FY 2010 DCPS Local Funds Adjustments:

Net effect of State Fiscal Stabilization grant funds under the provisions of Public Law 111-5, the ARRA and Local funds changes detailed on Table 5. **$ 23,678,429**

Total FY 2010 DCPS Local Education Agency Budget **$ 550,177,127**

Note: Numbers may not add up due to rounding

District of Columbia All Public Charter Schools FY 2010 Approved Budget
Per Pupil Funding Allocation Analysis (D.C. Official Code § 38-29)
TOTAL FOR 59 SCHOOLS

UPSFF Foundation Level: $8,770 / student

Grade Level	Weighting	Total Budgeted Enrollment	FY 2010 Total Budgeted Enrollment	Per Pupil Allocation	Total Funding Dollars
Pre-School	1.34	1,286	1,286	$ 11,752	$ 15,112,815
Pre-Kindergarten	1.30	2,059	2,059	$ 11,401	$ 23,474,659
Kindergarten	1.30	1,894	1,894	$ 11,401	$ 21,593,494
Grades 1-3	1.00	4,889	4,889	$ 8,770	$ 42,781,130
Grades 4-5	1.00	3,084	3,084	$ 8,770	$ 27,046,680
Ungraded Elementary School	1.00	-	-	$ 8,770	$ -
Grades 6 -8	1.03	6,897	6,897	$ 9,033	$ 62,301,291
Ungraded Middle/Jr. High School	1.03	-	-	$ 9,033	$ -
Grades 9 -12	1.16	5,465	5,465	$ 10,173	$ 55,596,538
Ungraded Sr. High School	1.16	-	-	$ 10,173	$ -
Alternative	1.17	423	423	$ 10,261	$ 4,340,361
Special Education Schools	1.17	225	225	$ 10,261	$ 2,308,703
Adult-Other	0.75	1,865	1,865	$ 8,578	$ 12,367,038
Subtotal General Education		28,067	28,067		$ 266,742,707
Special Education Add-On					
Level 1	0.52	957	957	$ 4,560	$ 4,364,303
Level 2	0.79	1,038	1,038	$ 6,928	$ 7,191,575
Level 3	1.58	439	439	$ 13,681	$ 6,006,047
Level 4	2.83	543	543	$ 24,819	$ 13,476,771
Subtotal for Special Education		2,977	2,977		$ 31,038,696
Other Add-On					
English Language Learner	0.45	1,791	1,791	$ 3,947	$ 7,069,207
Special Education-Residential Add-On					
Level 1 Residential	0.374	6	6	$ 3,280	$ 19,680
Level 2 Residential	1.360	22	22	$ 11,927	$ 262,398
Level 3 Residential	2.941	16	16	$ 25,795	$ 412,681
Level 4 Residential	2.924	-	-	$ 25,643	$ -
Level 5 Residential	9.40	-	-	$ 82,438	$ -
Subtotal for Special Ed Residential		44	44		$ 694,759
English Language Learner Residential Add-On					
ELL Residential	0.68	0	0	$ 5,964	$ -
Residential Room & Board Add-On					
Residential	1.79	387	387	$ 14,909	$ 5,769,783
Summer School	0.17	4,363	4,363	$ 1,491	$ 6,504,797
Total FY 2010 Instructional Dollars					$ 317,819,949
American Recovery and Reinvestment Act					$ 7,385,008
Facilities Allotment:					
Non-Residential Facilities Allotment		27,680	27,680	$ 2,800	$ 77,504,000
Residential Facilities Allotment		387	387	$ 8,395	$ 3,248,865
			Total FY 2010 Facilities Allotment		$ 80,752,865
			Total FY 2010 Budget		$ 405,957,822

The FY 2010 proposed budget funds the Uniform Per Student Formula allocation for the District of Columbia Public Charter Schools from three sources: $373,968,702 from Local Funds, and in Intra-District Funds transferred from the Office of the State Superintendent of Education, $7,385,008 for Special Education grants under IDEA and $24,604,112 in State Fiscal Stabilization Funding, representing funding pursuant to the American Recovery and Reinvestment Act of 2009, Public Law 111-5.

Note: Numbers may not add up due to rounding

Appendix P2.1

STEM LEA Highlights

LEA STEM Highlights

- DCPS: As DC's only traditional LEA and its largest, serving about 45,000 students, DCPS presents a number of opportunities for students to participate in STEM learning at every grade level.
    - In 2004, DCPS re-opened McKinley Tech Senior High School – a previously low-achieving high school – as the district's first ever STEM high school. McKinley represents a success both as a STEM program and a turnaround model. Closed years earlier as a result of underperformance, McKinley reopened in a fully modernized facility with a completely new STEM academic program.
    - In 2009, Chancellor Rhee named 13 DCPS elementary and middle schools selected for transformation into theme-based Catalyst Schools, following a competitive application process. All 13 Catalyst Schools (including 6 with a STEM theme) are comprehensive models (i.e., open to all students) and do not require a special admissions process, thus providing STEM access to *all* students – including more females (who may be underrepresented via application-only STEM programs and are underrepresented in STEM professions in general). The overall vision for the DC Catalyst Project includes transforming whole schools through engaging students in active discovery across all levels and subjects; developing educators; and enhancing communities.
        - Curricular approaches take special care to engage female students in STEM subjects, and STEM schools connect with retired scientists and engineers to provide hands-on activities and exposure to career opportunities (through a local organization called ReSET, or Retired Scientists, Engineers and Technicians). Elementary STEM schools use an integrated curriculum to provide basic exposure to STEM fields as a theme for engagement that will bridge the pathway to higher grades and beyond. At the secondary level, active, project-focused classrooms are ideal for STEM integration, but are also complemented by the introduction of more specific-scientific content. By sixth grade, every student will

- Partnerships with local experts, such as the Carnegie Institute of Washington and National Institute of Health provide summer professional development opportunities and year-long coaching, while connections to other DC Catalyst schools provide frequent opportunities for cross-school collaboration across the city. The National Air and Space Museum is currently working with STEM school pre-kindergarten teachers to encourage science in the early childhood setting.

- Adopting a DC Catalyst theme allows a school to build a community around its distinct core focus. For example, STEM Catalyst schools are currently engaged in discussions with the Smithsonian Institution's education division to help develop partnerships with museums. Other STEM Catalyst schools will be involved in the District Department of the Environment Watershed Program, while additional opportunities for unique after school activities include the FIRST Lego League Robotics Club, school-wide projects, and parent/community events such as a statewide STEM showcase.

- STEM Catalyst schools are expected to spur an increased focus on STEM throughout the State. The unique programs, pilots, and engaging lessons or units that these schools build will be scaled to enhance STEM education in schools across the District. Furthermore, STEM is a viable school improvement tool: of the six schools that fully implement the STEM Catalyst theme in Fall 2010, one is in Year 1 of improvement status, one is in Year 2 of improvement status, and three are in corrective action. In all cases, STEM is viewed as multi-prong strategy to address student needs while simultaneously using STEM as a turnaround lever.

- DCPS is using STEM as a key lever in its turnaround effort for Woodson Senior High School, one of the state's lowest-achieving schools (only 24% of Woodson students are proficient in reading, 25% are proficient in mathematics). Woodson will receive a new facility and a new academic program, with partnership support from Battelle. Architectural design and planning are aligned with the programmatic design and development of an exciting STEM curriculum (including discussions to build a jet wind turbine at the school).

- Six DCPS high schools have adopted the Project Lead the Way engineering program: Cardozo, Columbia Heights, Dunbar, McKinley, Phelps, and Wilson. Additionally, Eastern SHS, a school undergoing a program and facilities turnaround, will adopt the biomedical sciences program when it reopens in 2011.

- E.L. Haynes Public Charter School serves children in grades PK-8, with plans to grow through 12th grade. E.L. Haynes uses an integrated science and technology approach in elementary and middle school.
  - Science is strongly rooted throughout the E.L. Haynes learning environment. To accompany its rigorous science standards, E.L. Haynes recently developed standards-based science assessments, both interim and end-of year, for grades 1-8. The interim assessments, which students take three times over the course of the year, are modeled after the NAEP and DC CAS science assessments, and measure students' science content and process knowledge gained through the hands-on science classes. Teachers analyze and use the data from these interim assessments to identify and plan for concepts that need to be reviewed and to identify weaknesses and gaps in curriculum. In addition, every E.L. Haynes class embarks on a six- to nine-week learning expedition each spring. These expeditions involve in-depth, long-term investigations of significant real-life problems and incorporate service-learning opportunities in the community, extensive fieldwork, and visits from outside experts in the field.
  - Technology supports each E.L. Haynes math and science classroom in third through eighth grade. Promethean boards, document and video cameras, student

- E.L. Haynes has a growing engineering curriculum. Engineering components have already been incorporated into some existing science units; students in second grade create toys through investigation of simple machines, while fifth-graders create solar ovens as part of a lesson on solar energy. Over the next year, E.L. Haynes will develop and adopt engineering standards and expand its engineering learning options.

- Friendship Public Charter Schools is the District's second-largest LEA, serving over 3,600 students.
    - Friendship has fully integrated technology and innovation across its six schools. SmartLabs in 5 campuses allow students do STEM work. The Smart Lab facilitator at every campus goes into all classrooms, including kindergarten classrooms, to do robotics work with students.
    - Collegiate Academy utilizes Project Lead the Way and offers a full range of STEM educational opportunities, except bioengineering.
    - Engineering is a strong theme throughout Friendship schools. Students are exposed to robotics at every grade level in every Friendship school. Robotics teams at every campus that compete in a variety of robotics contests, including local and national contests such as those sponsored by the National Society of Black Engineers and First Robotics. Elementary teams compete in the Legos competitions.
    - The STEM-focused school uses Sig Tech as its engineering curriculum. At Collegiate Academy, AP computer science is combined with CISCO certification courses. Students build and repair computers in a computer club. The Friendship News Network merges STEM and media for students in grades 6-12.

- Friendship places a specific focus on ensuring students are ready for and transition successfully to college. Friendship alumni who major in engineering programs in college come back to encourage older high school students to attend. A separate engineering college tour to local and regional university engineering programs exposes students to opportunities that await them beyond high school. Finally, under a grant from the National Science Foundation, two high school students intern at the University of Maryland in their science labs.

- Howard University Middle School of Mathematics and Science Public Charter School $(MS)^2$:
  - $(MS)^2$ is designed to prepare middle school students for college and careers in math, science, and engineering. Students attend a technology-enabled school designed specifically for middle school students with the benefit of being located on an elite college campus.
  - A longer school day with accelerated instructional programs is enhanced by a wide variety of after-school enrichment activities developed by Howard University faculty and staff, including MathCounts, Science Fair, and Architecture Club.
  - Parents also have access to technology-related learning opportunities.
  - (MS)2 students are guided to pursue STEM opportunities in high school and beyond, and have been accepted into nearly all of the DC region's high-performing STEM and competitive comprehensive high schools.

- Washington Math Science Technology Public Charter High School:
  - WMST's PTE (Pathway to Engineering) program is co-sponsored by Project Lead the Way (PLTW), a national nonprofit organization that partners with secondary schools to implement curriculum that emphasizes hands-on experiences in Science, Technology, Engineering, and Mathematics (STEM). PTE will consist of a four-year high school sequence which includes courses in engineering taught in conjunction with traditional mathematics and science courses. The program will provide students with in-depth, hands-on knowledge of engineering and technology-based careers. This program begins in Fall 2010.

- The WMST Technology Pathway will prepare students for a technology future by exposing students to the wide range of basic and advanced computer uses and career specialties including game and story design, visual programming, robotics, business databases, web-based applications, and networking. After completing this pathway, when combined with a strong preparation in math, a WMST graduate will be well-prepared for college studies in Computer Science, Computer Engineering, Information Technology, Information Systems, Electrical Engineering, or other related fields.

- Through the completion of a Computer Foundations course offered in the 9th grade, students can obtain IC3 (Internet and Computing Core Certification) certification as well as Microsoft Office certifications. The IC^3 is a certification program that is designed to teach individuals the digital literacy skills associated with basic computer and Internet use.

- This summer 15 WMST students will be participating in an engineering program called Engineering Innovation. Engineering Innovation is an exciting college-level summer program for motivated high school students with an aptitude in math and science and an interest in (or curiosity about) engineering. Students learn to think and problem-solve like an engineer while earning Johns Hopkins University (JHU) credit.

- Every student at WMST must complete a Science Fair Project. This year students entered 28 projects in the City-Wide Science Fair and six students won awards. Additionally, WMST students participated in the DC Science Bowl competition.

Appendix P2.2

State Board of Education Resolution – Science

District of Columbia State Board of Education
DCSBOE

District of Columbia State Board of Education
DCSBOE

SR10-02
Resolution

The Members of the D.C. State Board of Education Present the Following Resolution

To Approve the Rearticulated Science Standards for Grades 5, 8, and Biology in the District of Columbia

WHEREAS, DC Code § 38-2652(a)(2) requires the State Board of Education to approve state academic standards, following a recommendation by the State Superintendent of Education, ensuring that the standards recommended by the State Superintendent of Education:

(A) Specify what children are expected to know and be able to do;
(B) Contain coherent and rigorous content;
(C) Encourage the teaching of advanced skills; and
(D) Are updated on a regular basis;

WHEREAS, the State Superintendent has recommended that the State Board of Education take approval action on the Rearticulated Science Standards for Grades 5,8, and Biology; and

WHEREAS, the State Superintendent has indicated that a complete review of all the Science Content Standards will be brought before the State Board for review in 2011 to ensure that the standards are updated on a regular basis unless there is an imminent national or state driven movement towards the development of science standards;

WHEREAS, the State Board of Education received public comment on the Rearticulated Science Standards for Grades 5, 8, and Biology through a public hearing held on March 3, 2010 and OSSE posted the proposed rearticulated standards on the website; and

WHEREAS, the proposed rearticulated science standards better align the standards and the assessments.

BE IT RESOLVED, that the State Board of Education approves the Rearticulated Science Standards for Grades 5, 8, and Biology dated February 24, 2010 http://osse.dc.gov/seo/cwp/view,a,1274,q,561249.asp.

March 17, 2010
Date adopted

Attest

441 4th Street, Suite 723N Washington, DC 20001
202.741.0888
www.sboe.dc.gov

Appendix P2.3

Battelle Partnership Agreement

May 21, 2010

Ms. Cate Swinburn
President and Executive Director
DC Public Education Fund
1534 14th St NW
Washington, DC, 20005

Donor's Objectives in Support of:
STEM Education in District of Columbia Public Schools

Dear Ms. Swinburn:

We are pleased to inform you that Battelle and the Governing Committee of the Columbus Foundation have approved a grant investment of $50,000 from the Battelle Foundation Fund payable to the DC Public Education Fund on or before June 4, 2010. These funds are intended to help accelerate your existing efforts within District of Columbia Public Schools regarding planning and design phases of two STEM education projects: H.D. Woodson STEM High School conversion and six Catalyst STEM K-8 schools.

The grant investment will be distributed to the DC Public Education Fund, currently acting as fiscal sponsor on behalf of the District of Columbia Public Schools (DCPS). This grant is restricted for use associated with the H.D. Woodson High School and STEM Catalyst schools projects.

This donor letter provides information regarding our interest and support of your current efforts, and specific guidelines for the use of these funds.

Background

Battelle – a charitable trust in the state of Ohio – was founded more than 80 years ago with the mission to manage scientific discovery and convert knowledge in practice applications of benefit to society and our economy. Over that period, we have contributed to some of the most important technological advances in support of national security, health, and energy. Battelle reinvests a portion of income from its global operating businesses to advancing the quality of education. Support is provided across a spectrum from early childhood through college scholarships, but the focus of Battelle is on improving science, technology, engineering, and mathematics (STEM) education. This is accomplished through deliberate formation of public/private partnerships with educators, school districts, businesses, foundations and state educators across the United States, with attention to students and populations historically underserved by the nation's public education systems.

Battelle, and many of the organizations we collaborate with, employ thousands of scientists and engineers. We have a strong interest in stimulating the next-generation of young people to pursue technology-related careers. But more importantly, Battelle recognizes the value of solid STEM as a foundation for success in any pursuit in life. This is underscored *in the will of Gordon Battelle, Item* 21st *"...improving the education of men and women to better prepare* them for employment" and has been included in Battelle's "Mission and Core Purposes" since its inception in 1929.

A primary operating principle in Battelle's engagement with STEM education is harnessing networks of partners to accelerate the progress of the work to improve teacher effectiveness and its impact on students. To that end, there is early but promising results from work in Ohio and in several other states.

Networks have rapidly created new schools through knowledge and talent sharing across districts, industry lines, and most recently across states. (See www.OSLN.org and Tennessee's Race to the Top application to the United States Department of Education pages 39, 117, and 147-149 at http://www2.ed.gov/programs/racetothetop/phase1-applications/tennessee.pdf for examples.) Given our strong interest in STEM and the presence of a Battelle operating location in the D.C. area, a dialogue was initiated with DCPS about potential areas of mutual interest.

Conversations between DCPS and Battelle

The District of Columbia Public Schools is pursuing the pilot of two STEM projects beginning in the Fall 2010: (1) STEM demonstration school, H.D. Woodson (open Fall 2011), and (2) Six STEM Catalyst Project schools focused on innovative practices, scalability, and sustainability (opening Fall 2010). In support of these projects, DCPS has committed two STEM Coordinators charged with the planning, hiring, and training of both teachers and administrators associated with these projects. DCPS has also received substantial support from the private sector that may defray any additional costs associated with initiating and implementing these programs, thus alleviating any unnecessary burden to the system. DCPS views its STEM commitment as an important component of the District's strategic objectives for providing innovative pathways for engaging underrepresented students in the STEM fields, and providing college readiness tools for successful enrollment and completion.

In early 2010, representatives from Battelle visited with DCPS staff in D.C. to explore opportunities of mutual interest. During that first meeting, we learned more about the plans for two STEM projects, H.D. Woodson High School conversion project and the Catalyst Schools project that consisted of six themed K-8 schools.

These discussions led to a March 1, 2010 visit to Cleveland, Ohio to the Metropolitan Cleveland Consortium STEM High School where DCPS staff and Battelle representatives visited with administrators, faculty, students and consultants associated with the design and operation of the school. The Cleveland school is part of the Ohio STEM Learning Network and much of its design/development was accomplished through its connection to other resources across the state and with Battelle.

Rationale for Grant Investment

There are hundreds of examples of strong STEM programs and schools across the country. Unfortunately, few have scaled to any level of significance beyond their own borders or are able to help new initiatives like that in D.C. Some practices are transferrable; others are specific to the local environment where the schools were created. But a common issue for those charged with STEM initiatives in their districts (whether it is developing new schools, curriculum, or teaching programs) is efficiently finding, accessing, and collaborating with relevant partners.

Battelle's work in multiple states and with leaders in STEM education creates an avenue for DCPS to accelerate progress during the early stages of its work. As you pursue planning for the DCPS STEM projects, the grant investment from Battelle is aimed at adding resources to ensure that administrative and teaching staff of D.C. public schools has the opportunity to investigate, learn, and connect to relevant resources. Battelle's education staff will also work closely with DCPS to help you access examples of effective STEM teaching and learning across the country.

The visit in March to the Metropolitan Cleveland Consortium STEM High School (MC^2 STEM HS) in Cleveland, Ohio is a preview of the personnel and resources within the various State STEM networks that Battelle wishes to make accessible to the DCPS design and planning teams. In addition, Battelle intends

to be closely engaged as a design collaborator to explore possibilities for deeper engagement in public/private partnerships with DCPS that could accelerate STEM education in the nation's capital.

Guidelines and Commitments

In support of the DCPS STEM initiatives, Battelle is providing DCPS with a $50,000 grant investment and will facilitate and coordinate access to technical assistance from the Ohio STEM Learning Network's in-residence staff and other collaborators connected to Battelle including Battelle Affiliated National Laboratories, Battelle Ventures, Battelle Corporate Offices, and the larger Battelle Network of STEM resources.. The grant and support aim to accelerate DCPS leadership effectiveness in the early planning, design and implementation of the Woodson STEM High School and the Catalyst STEM Schools by:

- Accelerating the learning curve for DCPS leaders and teachers and administrative staff through visits to STEM demonstration sites, teacher training, and administrative support.
- Facilitating dialogue with district staff and other key contributors to develop a cohesive and shared vision for STEM education throughout the District.
- Facilitating dialogue about what is known regarding critical "pre-conditions" among partners and communities that set the foundation for effective public/private STEM partnerships, and assisting the DCPS strategy team to increase their knowledge about best practices, early challenges, effective STEM communication strategy, and barriers to success.
- Supporting the preparation of a design plan for the Woodson High School that leverages its unique proximity to D.C. area STEM-rich workplace sites.
- Using grant funds to purchase relevant curriculum materials.

As it is the intent of Battelle and DCPS to leverage this short-term effort into a long-term partnership, Battelle will work with DCPS to develop a plan for establishment of the partnership that will include the foundation for a longer-term D.C. strategic plan. If the partnership is agreed to by DCPS and Battelle, Battelle will work closely with DCPS in the start-up phase of the development to ensure its success. As part of the dialog and development that this grant supports, Battelle will coordinate with DCPS so that when the partnership is formed, a mutually-agreed to person will be ready to function as the director/executive coordinator for this partnership. Such a person will focus on providing support to the assigned DCPS staffers, the STEM schools, and the partnership as a whole when it grows, as well as provide connectivity to the Battelle Enterprise. That person, and other to-be-determined requirements that will enable the partnership, will be supported by Battelle through the partnership and until such time that the partnership is firmly established and sustaining.

Battelle understands that the DC Public Education Fund is a 501(c)(3) and will be the fiscal sponsor on behalf of the DCPS. If either the DC Public Education Fund or DCPS is unable to carry out this work due to bankruptcy, a legal matter that interrupts services, loss of key personnel or capability, or other material issues that impact your operations relating to this grant, you must notify Battelle immediately (not later than ten working days) of these circumstances. If the circumstances are not temporary, Battelle will work with the DC Public Education Fund to redirect the remaining funds and find satisfactory alternatives for continuing technical assistance to HD Woodson STEM High School and the six STEM Catalyst Schools. This could include authorizing transfer of all unexpended restricted funds to another qualifying organization to continue the delivery of grant services to the extent practical.

Reporting Requirements

A brief letter summarizing the activities that were supported by the grant investment is requested no later than December 31, 2010 or a date selected by the Battelle contact for this work. Of particular interest to Battelle is documenting what resources and people you were able to benefit from in the course of your work, as well as lessons learned and constructive feedback from these interactions.

Continued Collaboration Discussions

The District of Columbia is surrounded by a number of federal agencies and laboratories involved with setting and carrying out scientific activities of national significance. DCPS is in a unique geography, positioning it as a premiere location to advance the DCPS STEM education agenda by engaging with these scientific assets. These relationships take time to explore but can be a cornerstone in adding real-world relevance to STEM teaching and learning. To that end, concurrent with the guidelines noted earlier, Battelle is interested to work closely with the District of Columbia Public Schools to explore broader partnership opportunities. These opportunities would begin with Battelle, but anticipated to expand as appropriate to include community organizations, other school districts, regional universities, businesses, federal agencies and laboratories, and national education support and learning networks.

The day-to-day point of contact for coordination with Battelle will be Michael Kelly, a Vice President in Battelle's Crystal City Operations.

We look forward to supporting the upcoming work with DCPS and the benefit it will have on children in the District of Columbia area.

Best regards,

Richard D. Rosen
Corporate Vice President, Education and Philanthropy, Battelle
Executive Director, Ohio STEM Learning Network

RDR\ejp

CC: Mr. Michael Kelly
Vice President
Battelle Crystal City Operations

CC: Dr. Desmond Stubbs
Scientist-in-Residence
The Ohio STEM Learning Network

Battelle
The Business of Innovation

Guidelines Understood and Accepted by DC Public Education Fund and Battelle

DC PUBLIC EDUCATION FUND	BATTELLE MEMORIAL INSTITUTE
By:	By:
Its: President	Its: Corp. VP for Education & Philanthropy
Date: 5/24/10	Date: May 21, 2010

505 King Avenue Columbus, Ohio 43201 614-424-5901 www.battelle.org

Appendix P2.4

STEM Partners

Partner	Area of Partnership/Program	Strategic Focus
American Association of Applied Sciences (AAAS)	Engineering Program with DC Charters (Get Set); Assessment development partnership with ELH	Resource for finding working STEM professionals to partner with schools
American University	Math for America; possible PD for Catalyst	I3 proposal for STEM graduate certificate
Battelle Foundation	STEM strategic planning	Build a pipeline for DC students to STEM-related professions
Carnegie Institute	Catalyst STEM schools; First Light	PD for Catalyst STEM teachers; 6th grade student programming in Astrobiology
CISCO	Engineering, technology	Teacher materials, classroom technology, certification courses
DC Consolidated Forensics Laboratory	Catalyst STEM schools and high schools.	Possible opportunity for student internships, working STEM professionals for schools
District Department of the Environment	Watershed Wise DC Fellowship I3 – DCPS Catalyst program	Teacher training, resources and fieldwork for students
NASA	Various, specific longstanding partnership with one Catalyst STEM school	Teacher training, curriculum resources
National Institutes of Health (NIH)	Student out-of-school time (OST)	National Lab Day
National Math and Science Initiative	STEM PD and OST	
Smithsonian Institution	Science, field trips	Teacher/classroom partnerships, student OST experiences
University of Maryland and US Department of Defense	Engineering	Student internships and lab work
University of the District of Columbia (UDC)	Science and math	Teacher training
US Department of Energy	Science and math	Professional development opportunities, student resources
US Department of Homeland Security	Engineering, technology	School partnerships, teacher training