



International Center for
Leadership in Education

Central RESA June 21, 2013

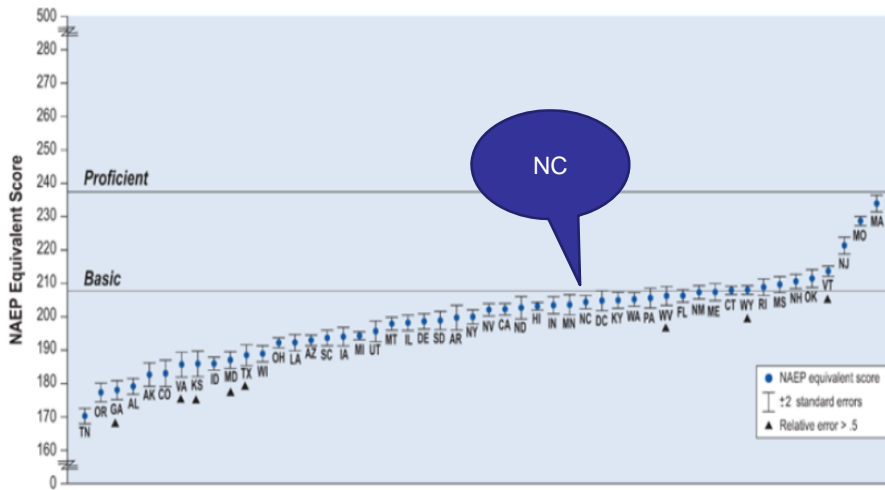
Susan Gendron
Senior Fellow
Policy Coordinator, SMARTER

Goals for the day

- Deepening understanding of Smarter
- Deepening understanding of new assessment types
- Discussion of strategies to reach ALL special populations

Reading Risk

Figure 2. NAEP scale equivalents of state grade 4 reading standards for proficient performance, by state: 2009



▲ Inferences based on estimates with relative error greater than .5 may require additional evidence.
 International Center for
 Leadership in Education NAEP Scales, IES August 2011

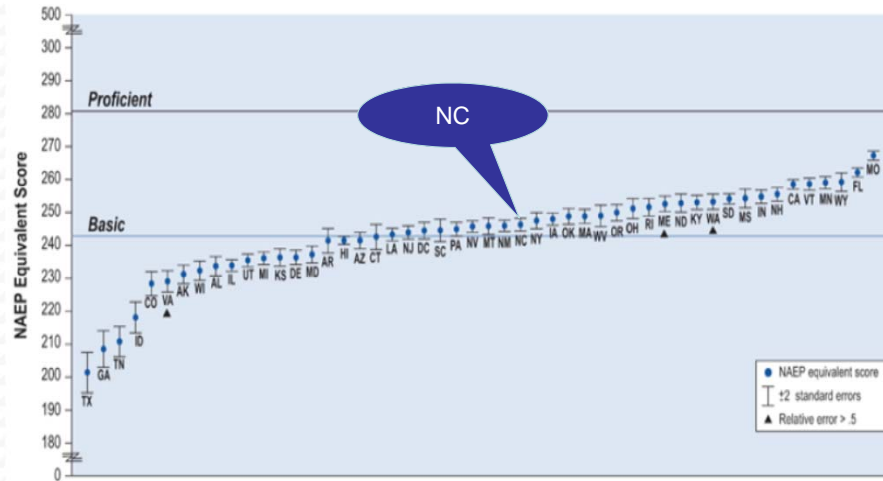
Proficiency Grade 4 Reading 2009

	Proficient	Required NAEP Score
South Carolina	84 %	194
Massachusetts	54 %	234
Missouri	47 %	229
North Carolina	69%	204
Minnesota	75 %	204
Washington	73 %	205
West Virginia	64 %	206

International Center for
 Leadership in Education

Reading Risk

Figure 4. NAEP scale equivalents of state grade 8 reading standards for proficient performance, by state: 2009

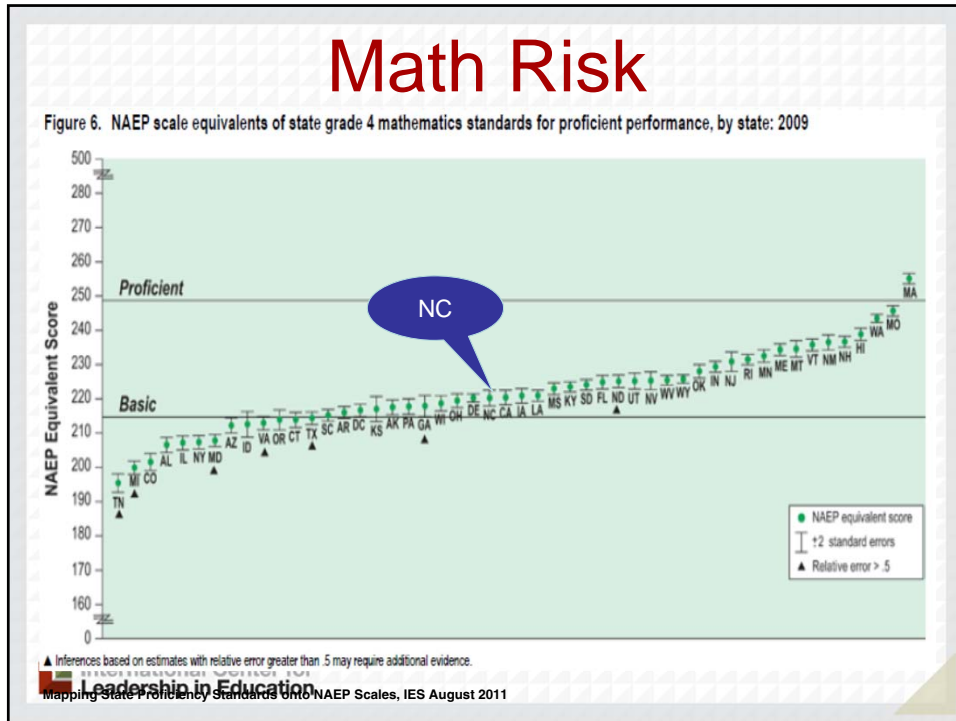


▲ Inferences based on estimates with relative error greater than .5 may require additional evidence.
 International Center for Leadership in Education
 Mapping State Standards to NAEP Scales, IES August 2011

Proficiency Grade 8 Reading 2009

	Proficient	Required NAEP Score
South Carolina	71%	245
Minnesota	67%	259
Missouri	50%	267
North Carolina	66 %	246
West Virginia	61%	249
Washington	68%	253

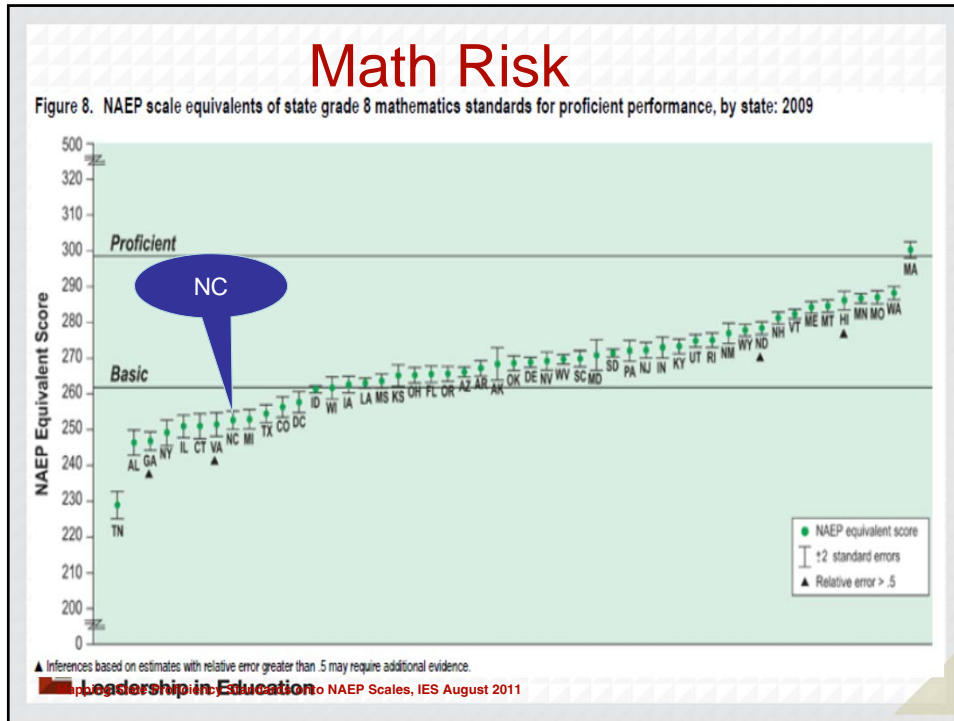
International Center for Leadership in Education



Proficiency Grade 4 Mathematics 2009

	Proficient	Required NAEP Score
South Carolina	69 %	215
Massachusetts	48 %	255
Missouri	45 %	246
North Carolina	81 %	220
Minnesota	73 %	233
Washington	52 %	243
West Virginia	65 %	225

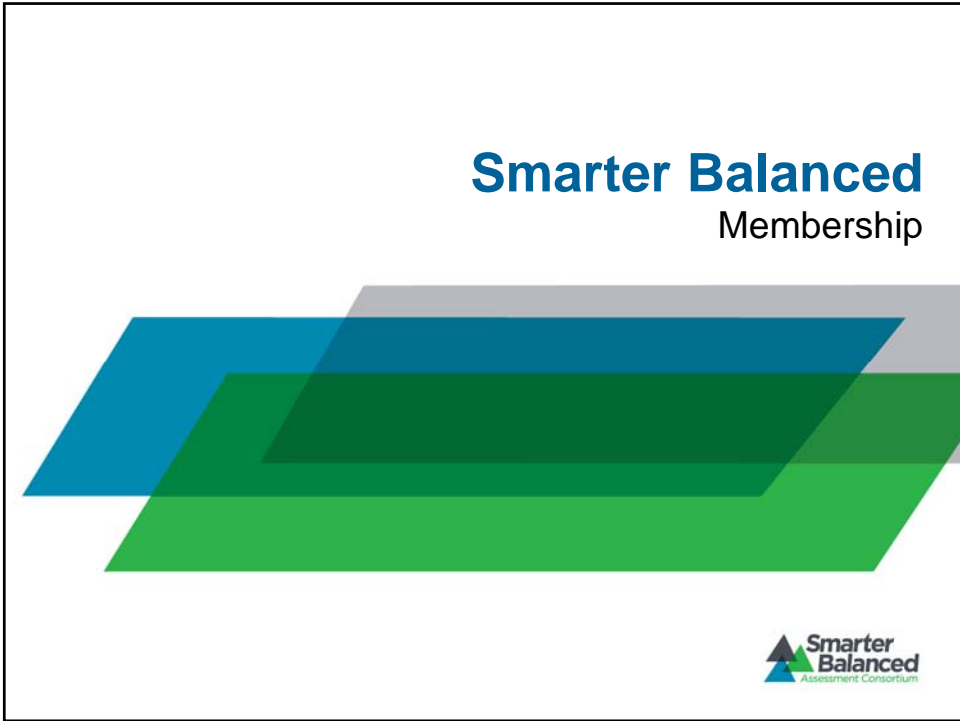
International Center for
Leadership in Education



Proficiency Grade 8 Mathematics 2009

	Proficient	Required NAEP Score
South Carolina	75%	270
Massachusetts	49 %	300
Missouri	47 %	287
North Carolina	80 %	253
Minnesota	58 %	287
West Virginia	53 %	270
Washington	51 %	288

International Center for Leadership in Education



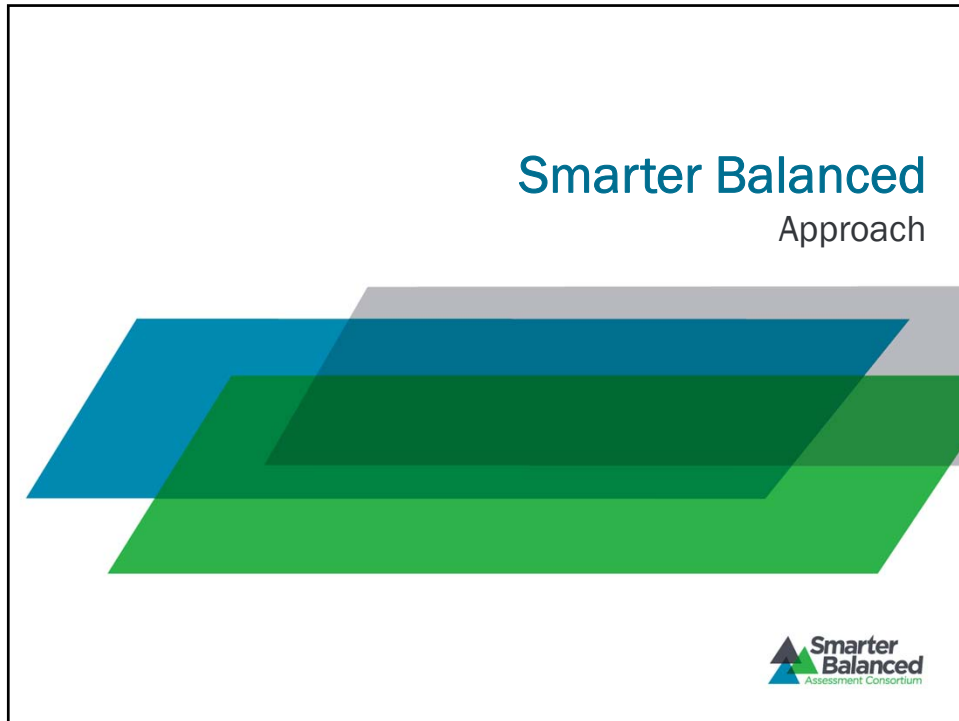
A National Consortium of States

- 26 member states and territories representing 39% of K-12 students
- 21 Governing States, 4 Advisory States, 1 Affiliate Member
- Washington state is fiscal agent
- WestEd provides project management services

U.S. Virgin Islands

Membership status as of April 16, 2013

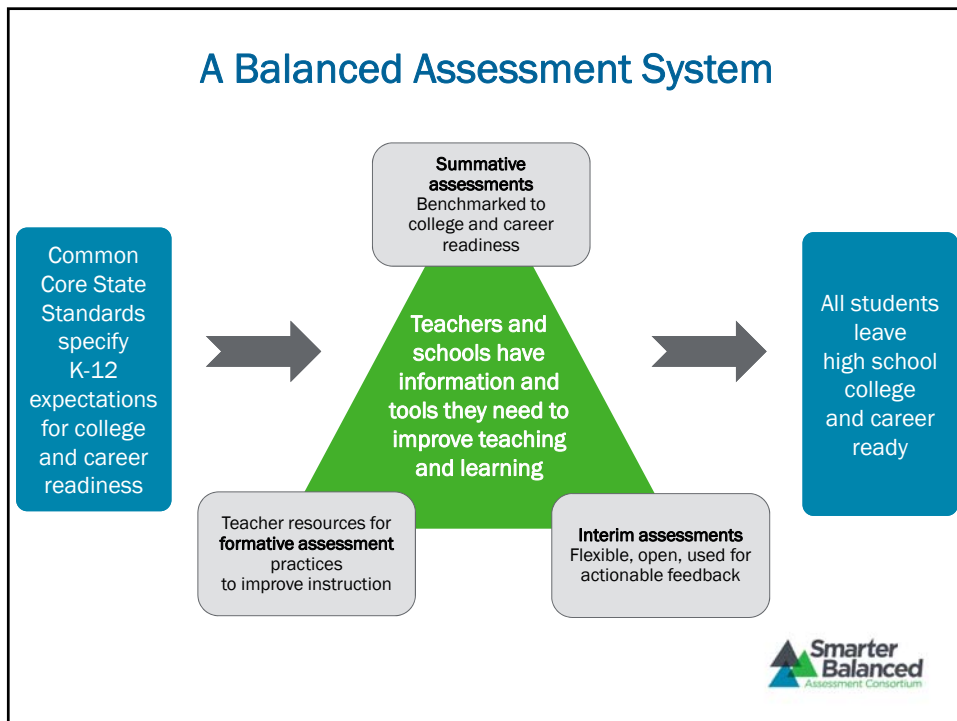
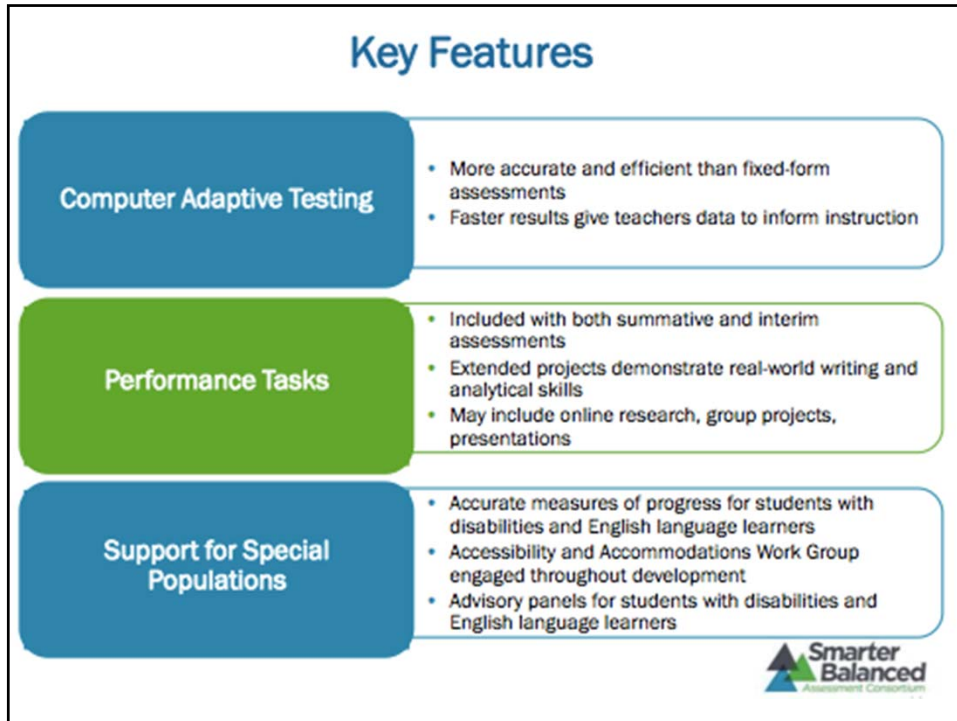
- Governing State
- Advisory State
- Affiliate Member



Seven Key Principles

1. An integrated system
2. Evidence-based approach
3. Teacher involvement
4. State-led with transparent governance
5. Focus: improving teaching and learning
6. Actionable information – multiple measures
7. Established professional standards





Assessment System Components

Summative Assessment (Computer Adaptive)

- Assesses **the full range of Common Core** in English language arts and mathematics for students in grades 3–8 and 11 (interim assessments can be used in grades 9 and 10)
- Measures **current student achievement and growth across time**, showing progress toward college and career readiness
- Can be given **once or twice a year** (mandatory testing window within the last 12 weeks of the instructional year)
- Includes a **variety of question types**: selected response, short constructed response, extended constructed response, technology enhanced, and performance tasks



Six Item Types

- Selected Response
- Constructed Response
- Extended Response
- Performance Tasks
- Technology-Enabled
- Technology-Enhanced



Selected Response

Single Response – Multiple Choice

Many experts will tell you that television is bad for you. Yet this is an exaggeration. Many television programs today are specifically geared towards improving physical fitness, making people smarter, or teaching them important things about the world. The days of limited programming with little interaction are gone. Public television and other stations have shows about science, history, and technical topics.

Which sentence should be added to the paragraph to state the author's main claim?

- A. Watching television makes a person healthy.
- B. Watching television can be a sign of intelligence.
- C. Television can be a positive influence on people.
- D. Television has more varied programs than ever before.



Selected Response

Multiple Correct Options

Which of the following statements is a property of a rectangle? Select all that apply.

- Contains three sides
- Contains four sides
- Contains eight sides
- Contains two sets of parallel lines
- Contains at least one interior angle that is acute
- Contains at least one interior angle that is obtuse
- All interior angles are right angles
- All sides have the same length
- All sides are of different length



Constructed Response

The table below shows the number of students in each third-grade class at Lincoln School.

Students in Third-Grade	
Class	Number of Students
Mrs. Roy	24
Mr. Grant	21
Mr. Harrison	22
Ms. Mack	25

There are 105 fourth-grade students at Lincoln School. How many more fourth-grade students than third-grade students are at Lincoln School? Show or explain how you found your answer.



Constructed Response Extended Response

Ms. McCrary wants to make a rabbit pen in a section of her lawn. Her plan for the rabbit pen includes the following:

- It will be in the shape of a rectangle.
- It will take 24 feet of fence material to make.
- Each side will be longer than 1 foot.
- The length and width will measure whole feet.

Part A
Draw 3 **different** rectangles that can each represent Ms. McCrary's rabbit pen. Be sure to use all 24 feet of fence material for each pen.

Use the grid below. Click the places where you want the corners of your rectangle to be. Draw one rectangle at a time. If you make a mistake, click on your rectangle to delete it. Continue as many times as necessary.



Key
□ = 1 square foot

Use your keyboard to type the length and width of each rabbit pen you draw. Then type the area of each rabbit pen. Be sure to select the correct unit for each answer.

[Students will input length, width, and area for each rabbit pen. Students will choose unit from drop down menu.]

Pen 1:
Length: (feet, square feet)
Width: (feet, square feet)
Area: (feet, square feet)

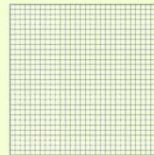
Pen 2:
Length: (feet, square feet)
Width: (feet, square feet)
Area: (feet, square feet)

Pen 3:
Length: (feet, square feet)
Width: (feet, square feet)
Area: (feet, square feet)

Part B
Ms. McCrary wants her rabbit to have more than 60 square feet of ground area inside the pen. She finds that if she uses the side of her house as one of the sides of the rabbit pen, she can make the rabbit pen larger.

- Draw another rectangular rabbit pen.
- Use all 24 feet of fencing for 3 sides of the pen.
- Use one side of the house for the other side of the pen.
- Make sure the ground area inside the pen is greater than 60 square feet.

Use the grid below. Click the places where you want the corners of your rectangle to be. If you make a mistake, click on your rectangle to delete it.



Key
□ = 1 square foot

Use your keyboard to type the length and width of each rabbit pen you draw. Then type the area of each rabbit pen. Be sure to select the correct unit for each answer.

Length: (feet, square feet)
Width: (feet, square feet)
Area: (feet, square feet)

Performance Task

Student Directions:

Part 1 (35 minutes)

Your assignment:

You will read a short story and article, watch a video, review research statistics, and then write an argumentative essay about your opinion on virtual schools.

Steps you will be following:

In order to plan and compose your essay, you will do all of the following:

1. Read a short story and article, watch a video, and review research statistics.
2. Answer three questions about the sources.
3. Plan and write your essay.

Directions for beginning:

You will now read the sources and watch a video. Take notes, because you may want to refer back to your notes while writing your essay. You can refer back to any of the sources as often as you like.

- (short story)
- (article 1)
- (video)
- (research statistics)

Questions

Use your remaining time to answer the questions below. Your answers to these questions will be scored. Also, they will help you think about the sources you've read and viewed, which should help you write your essay. You may click on the appropriate buttons to refer back to the sources when you think it would be helpful. You may also refer to your notes. Answer the questions in the spaces provided below them.

1. Analyze the different opinions expressed in "The Fun They Had" and the "Virtual High School Interview" video. Use details from the story and the video to support your answer.
2. What do the statistics from "Keeping Pace with K-12 Online Learning" suggest about the current trends of virtual schools in the U.S.? Use details from the charts to support your answer.

3. Explain how the information presented in the "Virtual High School Interview" video and the article "Virtual Schools Not for Everyone" differs from the information in the research statistics? Support your answers with details from the video and the articles.

Part 2 (85 minutes)

You will now have 85 minutes to review your notes and sources, and to plan, draft, and revise your essay. You may also refer to the answers you wrote to the questions in part 1, but you cannot change those answers. Now read your assignment and the information about how your essay will be scored, then begin your work.

Your Assignment

Your parents are considering having you attend a virtual high school. Write an argumentative essay explaining why you agree or disagree with this idea. Support your claim with evidence from what you have read and viewed.



Technology-Enabled

Selected or Constructed Responses that include Multimedia

Brianna is running for class president. She needs to give a speech to the 4th grade class. Listen to the draft of her speech and then answer the questions that follow.

(Test-takers listen to an audio version of the following speech.)

"Hi, My name is Brianna. I am running for class president, and I hope you will vote for me. You know many of my friends said they would. I am involved in many activities, including track and theater. If I am elected, I will hold several fundraisers so that all students in the 4th grade can go on a trip at the end of the year. Also, we can donate a portion of the money to a charity of our choice. If you want a class president who will work hard for you and listen to your needs, please vote for me next week!"

This speech needs to be revised before the student presents it. Which sentence should be omitted to improve the speech.

- A. I am running for class president, and I hope you will vote for me.
- B. You know many of my friends said they would.
- C. If I am elected, I will hold several fundraisers so that all students in the 4th grade can go on a trip at the end of the year.
- D. If you want a class president who will work hard for you and listen to your needs, please vote for me next week!"



Technology-Enhanced

Collects Evidence through a Non-Traditional Response

Below is a poem, a sonnet, in which the speaker discusses her feelings about a relationship. Read the poem and answer the question that follows.

Remember
by Christina Rossetti

Remember me when I am gone away,
Gone far away into the silent land;
When you can no more hold me by the hand,
Nor I half turn to go yet turning stay.
Remember me when no more day by day
You tell me of our future that you plann'd:
Only remember me; you understand
It will be late to counsel then or pray.
Yet if you should forget me for a while
And afterwards remember, do not grieve: 10
For if the darkness and corruption leave
A vestige* of the thoughts that once I had,
Better by far you should forget and smile
Than that you should remember and be sad.

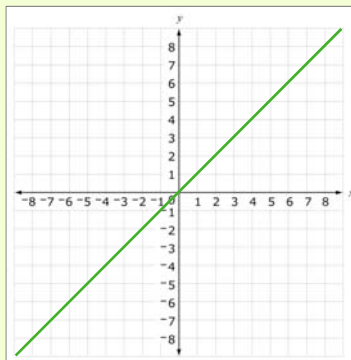
In the sonnet "Remember," which two lines reveals a change in the speaker's message to her subject?



Technology-Enhanced

Collects Evidence through a Non-Traditional Response

The value of y is proportional the the value of x . The constant of proportionality for this relationship is 1. On the grid below, graph this proportional relationship.



Assessment System Components

Interim Assessment (Computer Adaptive)

- Optional comprehensive and content-cluster assessment to help **identify specific needs of each student**
- Can be administered **throughout the year**
- Provides **clear examples** of expected performance on Common Core standards
- Includes a **variety of question types**: selected response, short constructed response, extended constructed response, technology enhanced, and performance tasks
- Aligned to and reported on **the same scale as the summative assessments**
- **Fully accessible** for instruction and professional development



Assessment System Components

Formative Assessment Practices

- Research-based, **on-demand tools and resources for teachers**
- Aligned to **Common Core**, focused on increasing student learning and enabling **differentiation of instruction**
- **Professional development** materials include model units of instruction and publicly released assessment items, formative strategies

“ Few initiatives are backed by evidence that they raise achievement. Formative assessment is one of the few approaches proven to make a difference. ”

- Stephanie Hirsh,
Learning Forward



Definition:

Assessment that takes place continuously during the course of teaching and learning to provide teachers and students with feedback to close the gap between current learning and desired goals.

Assessment Reform Group, 2002; Bell & Cowie, 2001; Black et al., 2003; Black & Wiliam, 1998; OECD, 2005; Sadler, 1989; Shepard, 2000)



29

Advantages of Formative Assessment

- Students learn faster
- Teachers know what students already know & adjust instruction
- Students aware of progress
- Most powerful moderator in student achievement
- Works for at risk students



Formative Assessment Strategies

(Black, William,1998; Sadler, 1998; Stiggins, 2007;Heritage, 2007)

- Pre-assessing students
- Sharing Learning goals with students
- Co-creating classroom discourse & questioning
- Rich & challenging tasks elicit student response
- Identifying gaps

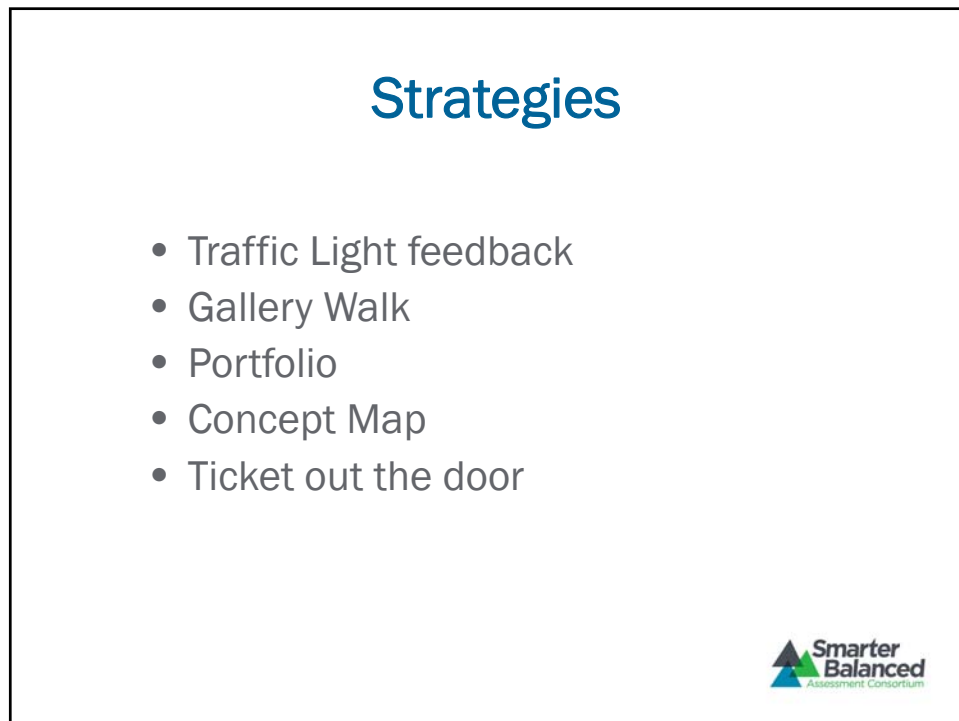
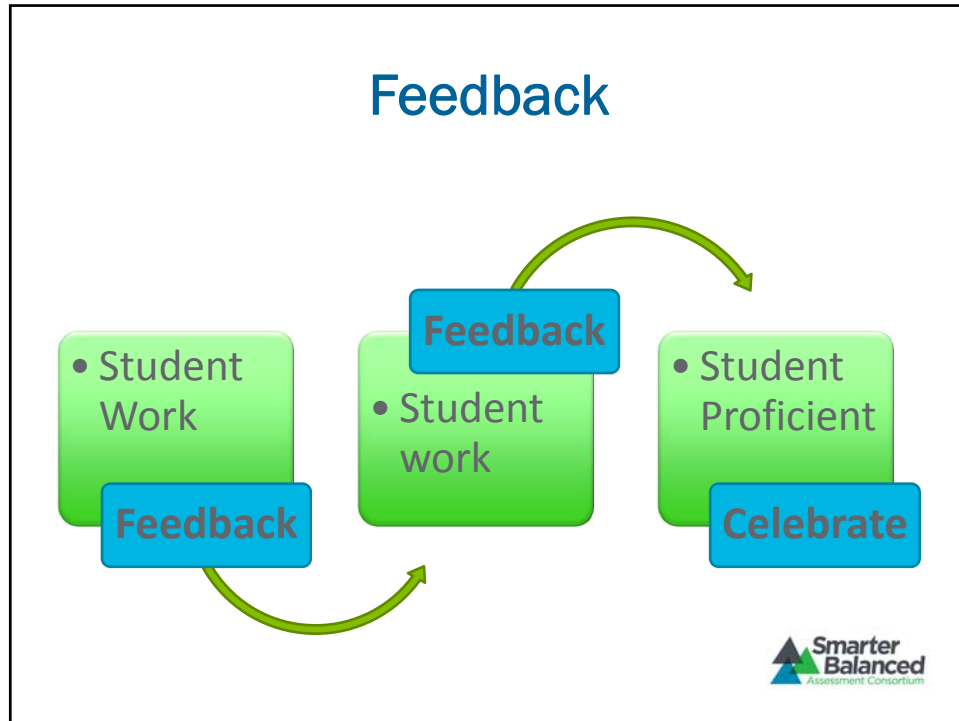


Formative Assessment Strategies

(Black, William,1998; Sadler, 1998; Stiggins, 2007;Heritage, 2007)

- Providing feedback/how to improve
- Self-assessments
- Peer- assessments
- Opportunities to close the gap
- Celebrations





What do students say

- Class discussion
- Debate
- Oral presentation
- story/event telling
- Agree/disagree
- Choral reading
- Think-Pair-Share
- You're the Judge
- Ask a question
- Make a Statement
- Radio Show
- Small group talk
- Play/drama
- Reciting a poem/speech
- Panel discussion
- Music
- Interviews
- Think aloud
- Answer specific
- Podcasts
- Read aloud
- Other_____



Ask Questions

- Use Fingers, Cards, Fingers
- A,B, C, D cards
- Rate responses
 - 4 – Complete response
 - 3 – Demonstrates an understanding or application of the goal
 - 2 – Minimal evidence
 - 1- No evidence



Take a Three Minute Pulse

- After 10-15 discussion, reading, lecture
- Reflect, discuss what they learned using higher order thinking skills
- Suggested questions: (Marzano)
 - How does this information relate to you?
 - How does what we've just learned relate to..
 - How is what we just learned similar or different to
 - Identify one thing you knew and one thing that was new to you...



Criterion for Feedback

- Timely
- Specific
- Understandable
- Actionable



Exit Sheet

I think I Got It

This is what I learned:
This is how your lesson helped:

Still Need More Practice

I'm still struggling with:
My biggest question is:

Tomorrow, Tomorrow

Can I have help with:
I could practice by:

Teach Me More

Mini-lesson idea:
This would help me because:



One Minute Response

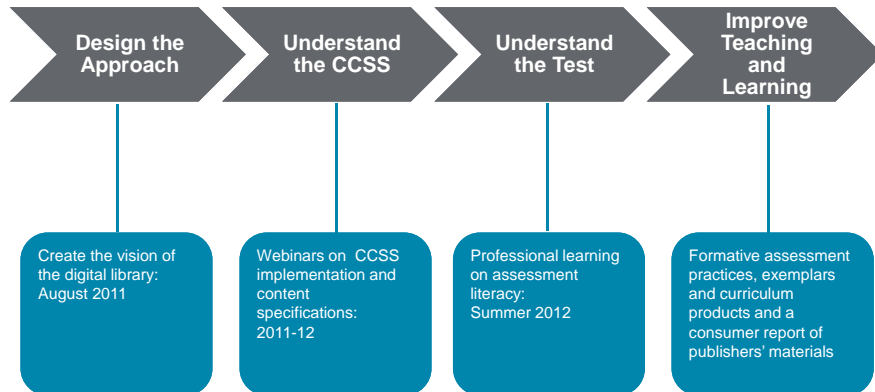
What I learned today...

What I am unclear/unsure about

Comments...



Formative Practices, Professional Learning and Implementation



Formative Practices, Professional Learning and Implementation

Design the Approach

- Theory of action hinges on improving teaching and learning
- Identified current practices and gaps, and what the needs are likely to be before and after the Smarter Balanced system is implemented
- Leveraging initiatives and resources that are already in place
- Interim and summative assessments will:
 - Ensure validity of the assessment by providing opportunities for teachers to be involved in the scoring of student work
 - Serve as opportunities for professional learning



Formative Practices, Professional Learning and Implementation

Understand the CCSS

- Teams of teachers from each state will:
 - Participate in identifying formative assessment practices and curriculum resources to put in Digital Library
 - Participate on a committee to complete voluntary alignment review of publishers' materials to the content specifications and develop a "Consumers Report" to upload to the Digital Library
- National content experts to develop 54 (3 ELA and 3 math per grade) formative assessment practices exemplar modules that provide model products for Smarter Balanced teachers (housed in Digital Library)
- Existing CCSS curriculum projects are adapted to align with the Smarter Balanced content specifications (and uploaded to the Digital Library)



Formative Practices, Professional Learning and Implementation

Understand the Test

- Produce high-quality test manuals that include administration guidelines and supports for teachers and students
- Support administration of test consistent with its purpose and intended use of data
- Offer trainings on how to administer the test, provide accommodations, use reporting system and other applications
- Enhance assessment literacy by providing well articulated training on interpreting assessment results
- Support connections with pre-service teachers



Formative Practices, Professional Learning and Implementation

Improve Teaching and Learning

- Provide comprehensive support for formative assessment, including instructional modules aligned with CCSS
- Training modules help teachers focus their instruction on the CCSS and develop teaching practices that support more in-depth learning
- Enhance assessment literacy by training teachers to use formative assessment tools and interim assessment to determine next steps in instruction
- Provide supports for students to manage their own learning

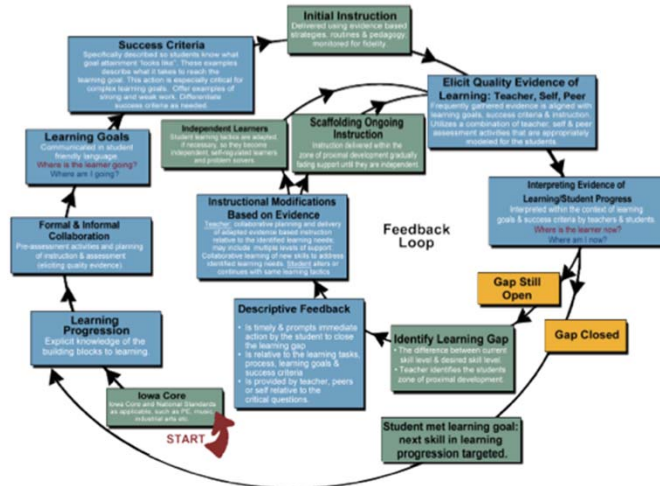


Digital Library



Smarter Balanced will create a Digital Library that:

- Helps educators skillfully adopt the **formative process** with fidelity, so that educators:
 - Formatively evaluate students' understanding during instruction
 - Make appropriate changes based on what they learn
 - Provide students actionable feedback
- Helps parents understand where their children are within the learning progressions
- Improves parents' (students') ability to guide the learning of their children (or self) at home



Digital Library State Leadership Teams and State Networks of Educators

- Build capacity within the state to support educators in implementing formative assessment practices and the transition to Common Core State Standards.
- Build on existing professional learning networks within the state.



Smarter Balanced Digital Library

- The Smarter Balanced system will go beyond assessment to include a Digital Library of formative tools and resources that help teachers transition to the Common Core Standards and tailor instruction to student needs. The Digital Library is designed as an online platform where educators, parents, and students can engage with professional learning resources and each other via collaboration tools - as well as learn more about the Smarter Balanced Assessment System. The Digital Library's resources will emphasize formative assessment practices and will include an extensive selection of resources necessary to transform classroom instructional practices and to support student readiness for college and careers.



State Leadership Team

- **Composition:** Each state will identify 8-10 educators with expertise in the CCSS, ELL, SwD, formative practice, curriculum and instruction, and adult online learning for the State Leadership Team (SLT)
- **Goal:** Create a sustainable leadership system to populate the Digital Library and disseminate information to the greater community of educators
- **Activities:**
 - Identify and recruit for the State Network of Educators
 - Participate in 5 face-to-face regional training sessions
 - Deliver periodic training sessions to members of the State Network of Educators (SNE)
 - Monitor SNE resource vetting
 - Support members of the SNE with their tasks
- **Time Requirement:**
 - At least 2 hours per week throughout the project
 - Up to 8 hours per week during finalization of key deliverables
- **Reimbursement:**
 - No salary reimbursement is provided by the Smarter Balanced contractor
 - Travel expenses to regional training will be covered or reimbursed by the Contractor in line with Smarter Balanced and state policies



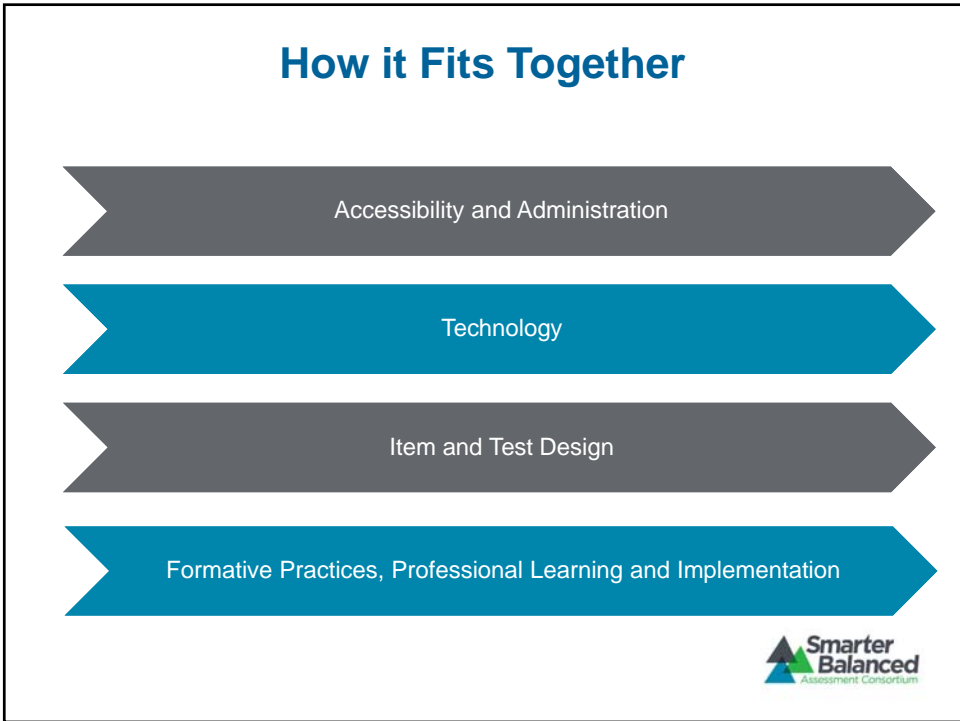
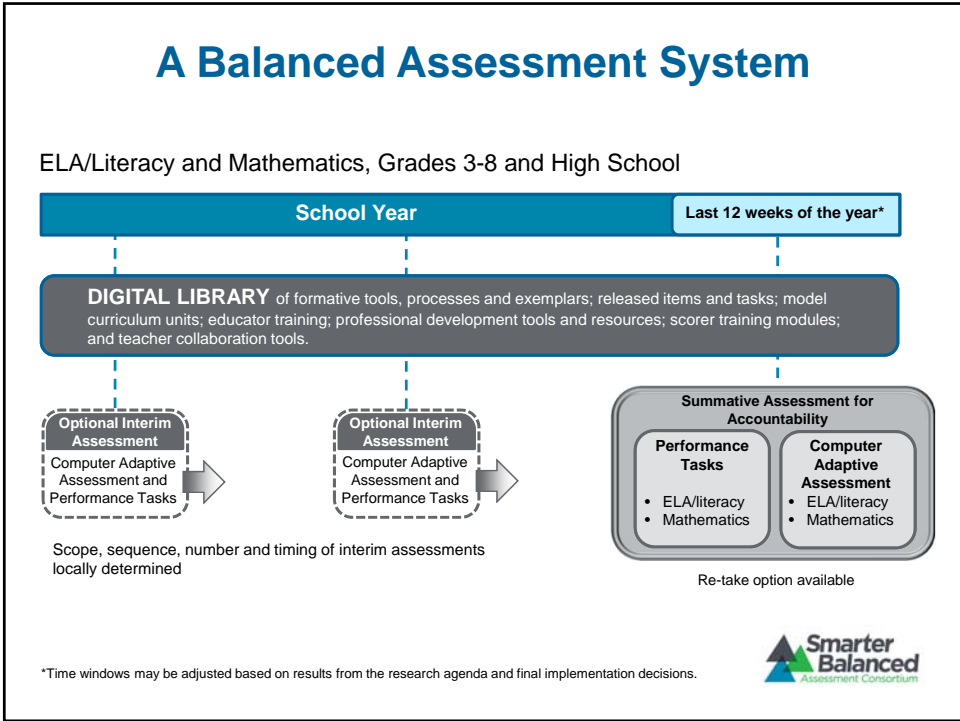
State Network of Educators

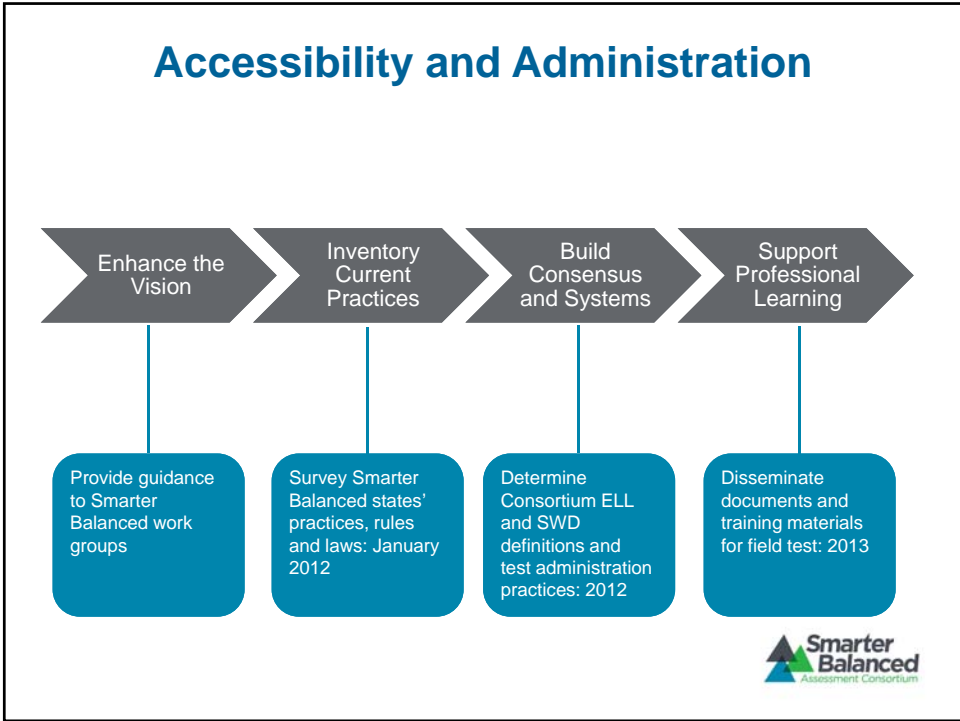
- **Composition:** Each state will identify a State Network of Educators (SNE) of between 70-150 members (based on state size)
- **Goal:** Work closely with the State Leadership Team (SLT) to vet, identify, and submit resources for the Digital Library
- **Recruitment:**
 - Contractor will provide the SLT Leads/State Leads with SNE recruiting materials, including target recruitment numbers
 - K-12 and higher education educators will be selected through an application process
- **Activities:**
 - Participate in 5 web-based training sessions led by the SLT
 - Deliver training sessions to state-wide professional learning networks
 - Vet existing resources and identify additional resources for the Digital Library
- **Payment:**
 - Wireless Generation and Public Consulting Group will contract with members of the SNE and pay a stipend from designated project funds
 - The stipend for **full participation** is estimated to be \$1500. Stipend amount may vary based on member participation.

Digital Library Expert Panel

- [Dr. Lynne Anderson-Inman](#)
- [Dr. Bridget Dalton](#)
- [Dr. Linda Darling-Hammond](#)
- [Dr. Diane Heacox](#)
- [Dr. Margaret Heritage](#)
- [Dr. Joan Herman](#)
- [Dr. John Hill](#)
- [Dr. Yvette Jackson](#)
- [Dr. Henry Kepner](#)
- [Dr. Katherine McKnight](#)
- [Valerie L. Mills](#)
- [Dr. David Pearson](#)
- [Dr. James Popham](#)
- [Dr. Maria Ruiz-Primo](#)







Accessibility and Administration

Enhance the Vision

- Support the Technology, Item Development and Test Design work groups as they incorporate the principles of accessibility and universal design into the design of the Smarter Balanced system
- Identify the variables, attributes and components of tests that need to be dynamic to address the full range of student needs

Accessibility and Administration

Inventory Current Practices

- Released RFP requesting a thorough review of literature review and Smarter Balanced member state policies, rules and laws regarding ELLs and SWD
- Identified the manuals and materials that will be necessary to support state implementation of the pilot and field test as well as the operational test



Accessibility and Administration

Build Consensus and Systems

- Facilitate consensus among member states regarding common definitions of ELL and SWD, and common accommodations for ELL and SWD
- Draft manuals and materials to support state implementation of pilot and field test as well as operational test
- Materials will be used as part of an iterative design; build and revise approach to technology called agile development
- They will also be used to support the development of professional learning modules and other formative tools



Accessibility and Administration

Support Professional Learning

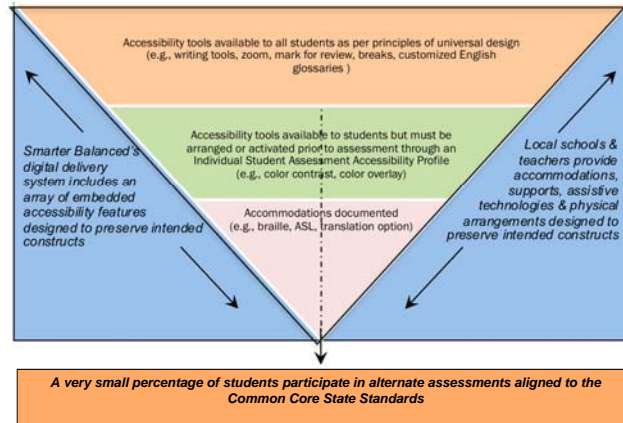
- Initial materials will contribute to the body of work to support high-quality instruction and student learning
- State monitoring and consortium-wide research will improve and enhance the systems
- Deep connections with higher education will bring the knowledge to new teachers through teacher preparation programs
- Ongoing professional learning for state staff will increase state capacity



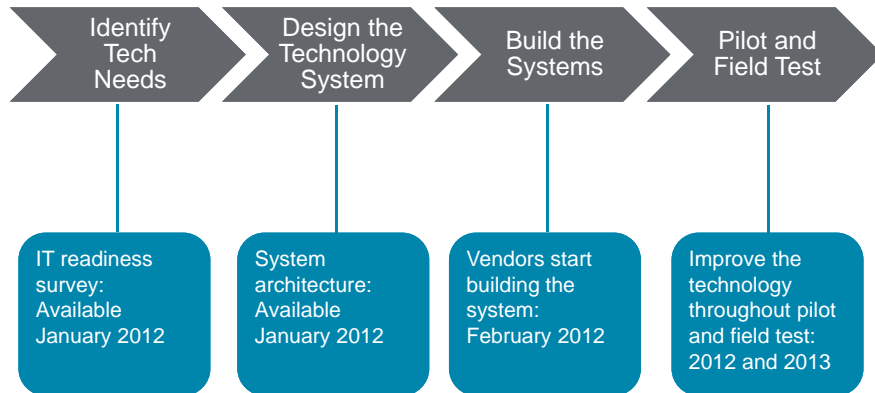
Matrix of Accessibility Features

	Available to All	Available with ISAAP	Available with Documentation
Embedded	English Glossaries Highlighter Mark for Review Masking Writing Tools Zoom Expandable Passages Calculator Digital Notepad Tab-enter Navigation Embedded Math Tools	Color Overlays Color Contrast Guided Line Reader Magnification Reverse Contrast Text-to-Speech	ASL Audio Captions Braille Translation Option Auditory Calming
Non-Embedded	Breaks Scratch Paper	Color Overlays	Abacus Hand-held Calculator Print on Demand Quiet Environment

Figure 1: Conceptual Model of the Smarter Balanced Accessibility and Accommodations Framework



Technology



Technology

Design the System

- System architect will create blueprints that allow vendors to build the system
 - Create prototype user profiles that clarify the various roles of people who need to use the various systems
 - Member states and vendor community will give feedback on profiles and flows to ensure system meets broad requirements
 - Architect will design more detailed specifications and technology governance structures, and recommend interoperability standards



Technology

Identify Technology Needs

- Technology readiness application available for states, districts and schools to enter data regarding hardware, software, bandwidth, staffing, electrical systems and other infrastructure required for online testing
 - Data will be compared against minimum and recommended requirements
 - Application will support progress tracking
 - Data useful for state and national policymakers considering total cost of ownership of a high-quality assessment system



Technology Strategy Framework and System Requirements

(February 2013)

Hardware and Software Requirements Overview

Operating System	Minimum Smarter Balanced Requirements for Current Computers ^{1,2,3}	Recommended Smarter Balanced Minimum for New Purchases
Windows	Windows XP (service pack 3) Pentium 233 MHz processor 128 MB RAM 52 MB hard drive free space	Windows 7 1 GHz processor 1 GB RAM 80 GB hard drive or at least 1GB of hard drive space available
Mac OS X	Mac OS X 10.4.4 Macintosh computer with Intel x86 or PowerPC G3 (300 MHz) processor, 256 MB RAM, 200 MB hard drive free space	Mac OS X 10.7+ 1GHz processor 1GB RAM 80 GB hard drive or at least 1GB of hard drive space available
Linux	Linux (Ubuntu 9-10, Fedora 6) Pentium II or AMD K6-III 233 MHz processor 64 MB RAM 52 MB hard drive free space	Linux (Ubuntu 11.10, Fedora 16) 1 GHz processor 1 GB RAM 80 GB hard drive or at least 1GB of hard drive space available
iOS	iPads 2 running iOS6	iPads 3+ running iOS6
Android	Android-based tablets running Android 4.0+	Android-based tablets running Android 4.0+
Windows	Windows-based tablets running Windows 9+ (excluding Windows RT)	Windows-based tablets running Windows 9+ (excluding Windows RT)
Chrome OS	Chromebooks running Chrome OS (v19)+	Chromebooks running Chrome OS (v19)+

Minimum Computer Requirements

Minimum requirements represent a low compliance threshold. Districts should attempt to exceed these requirements as many machines operating at these levels could struggle with sufficient on-board memory and processing to run secure browsers as well as other simultaneous running programs accumulated on the device over time.

- 1 The minimum Smarter Balanced requirements are generally equivalent to the minimum requirements of the associated eligible operating system. Users should refer to the minimum requirements of the operating system as a means of resolving any ambiguities in the minimum Smarter Balanced requirements.
- 2 These guidelines do not supersede the minimum requirements of the operating systems.
- 3 All hardware choices should consider the individual needs of students. Some students may need hardware that exceeds these minimum guidelines, and some students may require qualitatively different hardware. Tablets may require the use of a mouse.



Technology Strategy Framework and System Requirements

(February 2013)

Additional Requirements Applicable across Operating Systems

Device Requirements	Minimum Smarter Balanced Requirements for Current Computers
Screen Size	10" class or larger 1024 x 768 resolution
Headphones / earphones	Available to students for use during the English language arts test and for students who require text-to-speech features on the mathematics test
Security	The device must have the administrative tools and capabilities to temporarily disable features, functionalities, and applications that could present a security risk during test administration.
Keyboards	Mechanical keyboards must be available unless students use alternative input devices as part of their classroom instruction.
Form Factors	No restriction as long as the device meets the other stated requirements. These forms include desktops, laptops, netbooks, virtual desktops and thin clients, tablets (iPad, Windows, Chromebooks, and Android), and hybrid laptop/tablets.
Network	Must connect to the Internet with approximately 10–20 Kbps available per student to be tested simultaneously.
Chrome OS	Chromebooks running Chrome OS (v19)+

Minimum Requirements for Other Devices

Minimum requirements represent a low compliance threshold. Ultimately, districts should attempt to exceed these requirements as many machines operating at these levels could struggle with sufficient on-board memory and processing to run secure browsers as well as other simultaneous running programs accumulated on the device over time.

⁴ The resources (e.g., memory and processors) available to each client need to be equivalent or greater to the requirements for standalone hardware



Important Takeaways

- Migrate from Windows XP to a newer OS within two years of end of support from Microsoft (April 2014)
- Computers should be upgraded to a minimum of 1 GB of RAM
- Ensure that devices have a minimum of 9.5-inch screen dimension with a resolution of 1024x768
- Student testing will operate on secure browsers downloadable from the Smarter Balanced website
- Current field testing indicates bandwidth requirement of 5-10 Kbps per student



Technology

Pilot and Field Test the System

- Pilot and field test will incrementally improve the technology used to support the system
- Pilot test a limited test of some of the components
- Field test a more comprehensive test and will include some integration of components
- Full system will be thoroughly quality controlled in advance of 2014-15



Smarter Balanced Achievement Levels: Alignment with PARCC & NAEP

	Smarter	PARCC	NAEP
Lowest Level	1	1	Below Basic
↓	2	2 & 3	Basic
↓	3	4	Proficient
Highest Level	4	5	Advanced

- Smarter Balanced — Level 3 is College Content-Ready
- PARCC—Level 4 is College Ready



College Content Readiness

English language arts/literacy	Students who perform at the College Content-Ready level in English language arts/literacy demonstrate reading, writing, listening, and research skills necessary for introductory courses in a variety of disciplines. They also demonstrate subject-area knowledge and skills associated with readiness for entry-level, transferable, credit-bearing English and composition courses.
Mathematics	Students who perform at the College Content-Ready level in mathematics demonstrate foundational mathematical knowledge and quantitative reasoning skills necessary for introductory courses in a variety of disciplines. They also demonstrate subject-area knowledge and skills associated with readiness for entry-level, transferable, credit-bearing mathematics and statistics courses.



College Readiness Policy Framework

Level	Policy ALD	College Content-Readiness	Implications for Grade 12 and College Placement
Four	Demonstrates thorough understanding of and ability to apply the knowledge and skills associated with college content-readiness	Student is exempt from developmental course work.	States/districts/colleges may offer advanced courses (such as AP, IB, or dual enrollment) for these students. Colleges may evaluate additional data (courses completed, grades, placement test scores, etc.) to determine student placement in advanced courses beyond the initial entry-level course.
Three	Demonstrates adequate understanding of and the ability to apply the knowledge and skills associated with college and career readiness.	Student is exempt from developmental course work, <i>contingent on evidence of continued learning in Grade 12.</i>	Within each state, higher education and K-12 officials determine appropriate evidence of continued learning (such as test scores or course grades). Colleges may evaluate additional data (courses completed, grades, placement test scores, etc.) to determine student placement in advanced courses beyond the initial entry-level course.

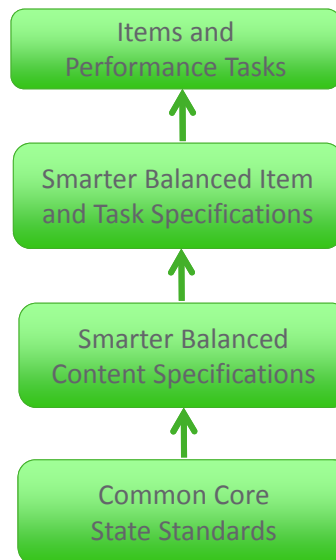
College Readiness Policy Framework

Level	Policy ALD	College Content-Readiness	Implications for Grade 12 and College Placement
Two	Demonstrates partial understanding of and the ability to apply the knowledge and skills associated with college content readiness.	Student needs support to meet college readiness standard.	States/districts/colleges may implement Grade 12 transition courses or other programs for these students. States also may choose to retest these students near the conclusion of Grade 12. Colleges may evaluate additional data (courses completed, grades, placement test scores, etc.) to determine placement in developmental or credit-bearing courses.
One	Demonstrates minimal understanding and the ability to apply the knowledge and skills associated with college content readiness	Student need substantial support to meet college content readiness standard.	States/districts/colleges may offer supplemental programs for these students. States also may choose to retest these students near the conclusion of Grade 12. Colleges may evaluate additional data (courses completed, grades, placement test scores, etc.) to determine placement in developmental or credit-bearing courses.

English Language Arts Content Specifications, Item Specifications, and Depth of Knowledge



Foundation for Item and Task Development



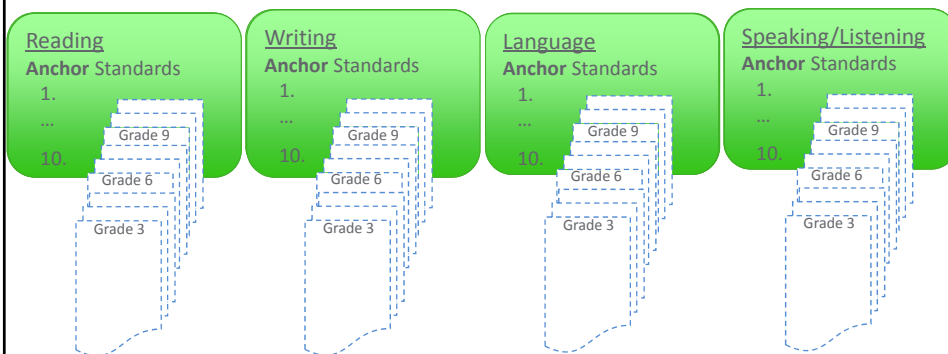
Structure of the *Common Core State Standards for English Language Arts and Literacy*

- Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects K–5
- Standards for English Language Arts 6–12
- Standards for Literacy in History/Social Studies, Science, and Technical Subjects



Structure of the Common Core State Standards

- Strands
 - College and career readiness anchor standards
 - Grade-specific standards



Structure of the Content Specifications

The *Smarter Balanced Assessment Consortium Content Specifications for English Language Arts and Literacy* is a bridge document linking the Common Core State Standards to the Smarter Balanced assessment claims and targets.

Item Development Guidelines for all Selected Response and Constructed Response Items and Performance Tasks	Guidelines for Developing Stems in SR Items
<ul style="list-style-type: none"> Each SR and CR item should be written to focus primarily on one assessment target. Secondary targets are acceptable for some Claim 1 targets and should be listed in the item forms. Each PT should be written to multiple claims and targets. Items/tasks should be clearly written to elicit the desired evidence of a student's knowledge, skills, and abilities. Items/tasks should avoid measurement of a student's feelings or values. Items/tasks should not provide an advantage or disadvantage to a particular group of students. Items should not exhibit or reflect disrespect to any segment of the population in regard to age, gender, race, ethnicity, language, religion, socioeconomic status, disability, or geographic region. Universal design principles must be followed. Universal design, as applied to assessments, is a concept that allows the widest possible range of students to participate in assessments and may even reduce the need for accommodations and alternative assessments by expanding access to the tests themselves. All items/tasks must be coded to the Smarter Balanced cognitive levels as indicated on page 68 of this document. Vocabulary items should follow the Common Core State Standards 3-tier words and academic vocabulary as described on pages 69-70 of this document. 	<ul style="list-style-type: none"> Stems should present a complete problem so that students know what to do before looking at the options; students should not need to read all options before knowing what is expected. Grades 3-5 stems should be in the form of a question. An open stem, however, may be used if doing so will reduce wordiness and repetition. Grades 6-11 permit open-ended stems, and there should be a variety of stem types. The decision for choosing open or closed stems should be based on ease of reading and clarity.
	<h3 data-bbox="824 655 1182 688">Guidelines for Developing Options in SR Items</h3> <ul style="list-style-type: none"> All options should be plausible and there must be a correct or best answer. All options, including the correct response, should be similar in length and syntax. Students should not be able to rule out a wrong answer or identify a correct response solely because it looks or sounds different from the other options. All options should be arranged according to a logical order (e.g., vocabulary words, details, or quotations from the passage should follow the order used in the text). All options must be followed by distractor analyses which help item writers think through students' common misunderstandings of a concept.



Structure of the Content Specifications

- **Part I: Introduction and Background**
 - Development Process for the Major Claims and Assessment Target
- **Part II: Content Specifications: Mapping Assessment Targets to Standards**
- **Part III: Claims, Rationale, Evidence, Assessment Targets, Proposed Reporting**
- **Categories**
- **References & Appendices**
 - [Appendix A](#): Cognitive Rigor Matrix/Depth of Knowledge
 - [Appendix B](#): Grade Level Tables for Reading Assessment Targets
 - [Appendix C](#): Tools for Examining Text Complexity



Alignment to Claims and Assessment Targets, Primary Claims & Secondary Claims

- **Common Core State Standards:** foundation for claims and assessment targets
- **Smarter Balanced Content Specifications:** define claims and assessment targets
 - Depth of Knowledge: Level of cognitive processes applied by students
- **Smarter Balanced Item and Task Specifications:** define evidence required and describe task models



What is a claim?

“**Claims**” are the broad statements of the assessment system’s **learning outcomes**, each of which **requires evidence** that articulates the **types of data/observations** that will support interpretations **of competence** towards **achievement** of the claims



The Smarter Balanced Assessment Consortium English Language Arts Content Specifications

- **Claim 1**: Students can read closely and analytically to comprehend a range of increasingly complex literary and informational texts. Reading, literary and informational text.
- **Claim 2**: Students can produce effective and well grounded writing for a range of purpose and audiences.
- **Claim 3**: Students can employ effective speaking and listening skills for a range of purposes and audiences.
- **Claim 4**: Students can engage in research/inquiry to investigate topics, and to analyze, integrate, and present information.



Assessment Targets (evidence)

- Describe the expectations of what will be assessed by the items and tasks within each claim.
- Prioritized content
- Shows how one or more of the Common Core State Standards (or parts of standards) address the target



Claim 1

- Students can read closely and analytically to comprehend a range of increasingly complex literary and informational texts.
 1. Targets 1–7 correspond with literary texts
 2. Targets 8–14 correspond with informational texts
 3. The assessment targets incorporate the content clusters from the Common Core State Standards



Assessment Targets for Reading

Literary	Informational
Key details	Key details
Central Ideas	Central Ideas
Word Meaning	Word Meaning
Reasoning and Evaluation	Reasoning and Evaluation
Analysis within and across text	Analysis within and across text
Text Stimulus and features	Text structures and features
Language Use	Language Use



Assessment targets for Literacy

1. Key Details - **DOK 1,2**
2. Central Ideas – **DOK 2**
3. Word Meaning – **DOK 1,2**
4. Reasoning and Evaluation – **DOK 3,4**
5. Analysis within or across texts – **DOK 3,4**
6. Text stimulus and features – **DOK 3,4**
7. Language Use – **DOK 2,3**



Assessment Targets for Informational Text

8. Key details – **DOK 1,2**
9. Central Ideas – **DOK 2**
10. Word Meaning – **DOK 1,2**
11. Reasoning and Evaluation – **DOK 3,4**
12. Analysis within or across texts – **DOK 2.3 Elem; 3,4 MS and HS**
13. Text Structures and Features – **DOK 2 Elem, 3,4 MS and HS**
14. Language Use – **DOK 2,3 Elem; 3 MS and HS**



Grade 4 Claim 1 Reading

Students read Grandma Ruth

What does Naomi learn about Grandma Ruth?
Use details from the text to support your answer.

Type your answer in the space provided



Grade 4 Claim 1

- Read the sentences from the passage. Then answer the question.
- “My grandma pulled the ball out, unwrapped it, and held it out for us to see. The ball was scarred almost beyond recognition. It had dog bite marks, dirt scuffs, and fraying seams. Right in the middle was a big signature in black ink that I had somehow overlooked. It was smudged now and faded, but it still clearly said ‘Babe Ruth.’ I began to shake inside.”
- Click on two phrases from the paragraph that help you understand the meaning of scarred.



Read this part of the text again.

“It turns out my mother loved the name Ruth. That’s how I got my name and how my father got these: he let Ty Cobb name me after Babe Ruth.”

I tried to swallow but couldn’t. I hoped that she wasn’t going to say what I thought she was going to say.

Then she said it.

“In this shoebox are the ten baseballs Ty Cobb gave my father. They are signed by some of the most famous ballplayers in history, including one that has one single signature on it: Babe Ruth’s.”

My grandma pulled the ball out, unwrapped it, and held it out for us to see. The ball was scarred almost beyond recognition. It had dog bite marks, dirt scuffs, and fraying seams. Right in the middle was a big signature in black ink that I had somehow overlooked. It was smudged now and faded, but it still clearly said “Babe Ruth.” I began to shake inside.

But my grandma just looked at the ball and smiled sweetly. She said softly, “Even though it doesn’t look like much, this ball has brought our family a lot of joy in its time. I remember when I was your age, Naomi, I almost rubbed the signature right off from tossing it up and down all the time. You see, I’ve always felt that a baseball should be used for a lot more than looking. My dad, your great-grandfather, used to say the same thing.”

Select three sentences that show that Naomi is worried she has done something wrong.




PLANES ON THE BRAIN

“Planes on the Brain” by Elisabeth Deffner, from *Faces Magazine*. Copyright 2011 by Carus Publishing Company.

How does the author emphasize the point that the TAM program was a positive influence on the sisters’ lives? Use details from the text to support your answer.



Recommended Placement for Assessment: Grade 7	
	<p>The quantitative Lexile measure suggests an appropriate placement at the grade 4–5 band. The Flesch-Kincaid of 7.4 suggests the 6–8 band. The qualitative measures, especially the levels of complexity and the subject matter, support placement at grade 7. Based on these sets of measures, this passage is recommended for assessment at grade 7.</p>
Qualitative Measures	Quantitative Measures
<p>Meaning/Purpose: Moderately Complex: Purpose of the text is not explicitly stated but can be inferred by the end of the passage.</p> <p>Text Structure: Very Complex: Ideas shift frequently between people upon which the information is focused. Text starts and ends with two sisters, suggesting that the purpose is to describe their lives when it's more general than that.</p> <p>Language Features: Moderately Complex: Text uses familiar words that are on grade level. The use of abbreviations and discipline-specific language increases the complexity, but a general understanding of the use of abbreviations and aircraft allows students to access the information.</p>	<p>Common Core State Standards Appendix A Complexity Band Level (if applicable): 4–5, based on the Lexile but 6–8 based on qualitative measures</p> <p>Lexile or Other Quantitative Measure of the Text: Lexile (approximate): 930 (grades 4–5) Flesch-Kincaid: 7.4</p> <div style="background-color: #2980b9; color: white; text-align: center; padding: 2px;">Considerations for Passage Selection</div> <p>Passage selection should be based on the ELA Content Specifications targets and the cognitive demands of the assessment tasks.</p> <p>Potential Challenges a Text May Pose:</p> <ul style="list-style-type: none"> • Accessibility • Language challenges • Background knowledge

Claim 2

- **Students can produce effective and well grounded writing for a range of purpose and audiences.**
 - **Targets 1, 3, & 6:** Revise/Write Brief Texts
 - **Targets 2, 4, & 7:** Compose Full Texts including essays and narratives
 - **Target 5:** Use of text features, e.g., headings, subheadings, etc.
 - **Target 8:** Language & Vocabulary Use
 - **Target 9:** Edit/Clarify
 - **Target 10:** Technology

Claim 2 - Writing

- A combination of shorter and longer writing assessment items/tasks collectively assess the ability of students to demonstrate their rhetorical skills and knowledge, including:
 - (1) address purpose and audience (setting a context – topic, question(s) to be answered, and establishing a **focus**/thesis/claim;
 - (2) organize and develop Ideas using a structure consistent with purpose (providing overall coherence using **organizational** patterns and transitions to connect and advance central ideas;
 - (3) provide supporting **evidence**/details/elaboration consistent with focus/thesis/claim;
 - (4) use **language** effectively (including word choice, sentence variety, precise/nuanced language, domain-specific language, and voice); and (5) apply conventions of Standard English.



The following is the beginning of a story that a student is writing for a class assignment. The story needs more details and an ending. Read the beginning of the story and then complete the task that follows.

Oliver's Big Splash

Oliver was a dog that lived in a small town near a lake. He loved to play outside. Oliver liked to play fetch, but his favorite thing to do was to chase leaves. He loved chasing leaves so much that his favorite time of year was fall when the leaves fell off the trees.

One beautiful fall day, Oliver and his owner, Jeff, went for a walk around the lake. They were enjoying the sunshine and the lake when suddenly a dragonfly flew past. For a moment, Oliver forgot where he and Jeff were and what they were doing. All of a sudden there was a big splash.

Write an ending for the story by adding details to tell what happens next.



The following is a rough draft of a paragraph that a student is writing for the school newspaper about why there should be a longer school day. The draft needs more details to support the student's reasons for having a longer school day.

Why There Should Be a Longer School Day

Schools should have a longer school day for students. First, students could learn more about different subjects if the school day were longer. Also, students could get extra help from teachers. More hours in class each day would also mean more vacations scattered throughout the year!



Now look at the following daily schedule for a school that has switched to a longer school day.

- 8:00 Morning Announcements
- 8:20 Reading Language Arts
- 9:30 Foreign Language
- 10:30 Morning Recess
- 10:45 Mathematics
- 11:45 Lunch
- 12:45 History
- 1:45 Art or Music
- 2:15 Afternoon Recess
- 2:45 Science
- 3:30 Homework Preparation
- 3:45 After-School Tutoring or Sports

Revise the paragraph by adding details from the daily schedule that help support the reasons for having a longer school day.

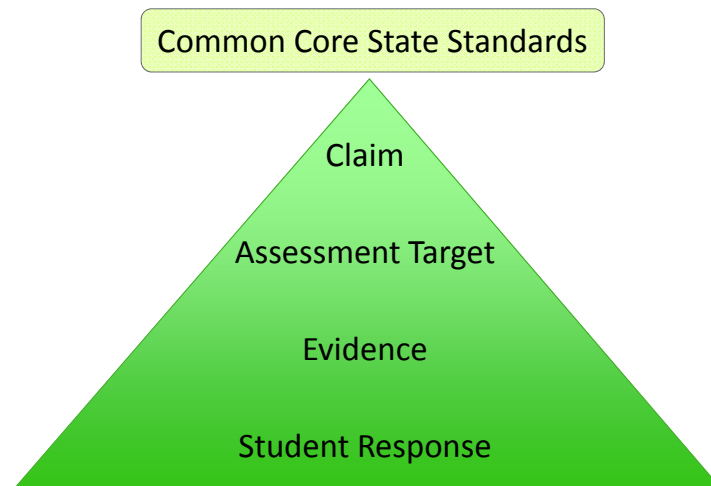


Writing dispositions/ habits of mind

- Engagement through making connections among ideas;
- Persistence to grapple with challenging ideas and texts;
- Responsibility to incorporate ideas of others, giving proper attribution;
- Flexibility of approaches and styles to match purpose;
- and utilizing metacognitive skills to reflect on their development as writers.



Building a Logical Argument



Claim 3

- **Students can employ effective speaking and listening skills for a range of purposes and audiences.**
 1. Language & Vocabulary Use
 2. Clarify Message
 3. Plan/Speak/Present
 4. Listen/Interpret



Claim 4

- **Students can engage in research / inquiry to investigate topics, and to analyze, integrate, and present information.**
 1. Plan/Research
 2. Interpret & Integrate Information (Elem)
 - Analyze/integrate (6-11)
 3. Analyze Information/Sources
 4. Use Evidence
 5. Language & Vocabulary Use
 6. Edit/Clarify
 7. Technology



Cognitive Rigor and Depth of Knowledge

- The level of complexity of the cognitive demand.
 - **Level 1:** Recall and Reproduction
 - Requires eliciting information such as a fact, definition, term, or a simple procedure, as well as performing a simple algorithm or applying a formula.
 - **Level 2:** Basic Skills and Concepts
 - Requires the engagement of some mental processing beyond a recall of information.
 - **Level 3:** Strategic Thinking and Reasoning
 - Requires reasoning, planning, using evidence, and explanations of thinking.
 - **Level 4:** Extended Thinking
 - Requires complex reasoning, planning, developing, and thinking most likely over an extended period of time.

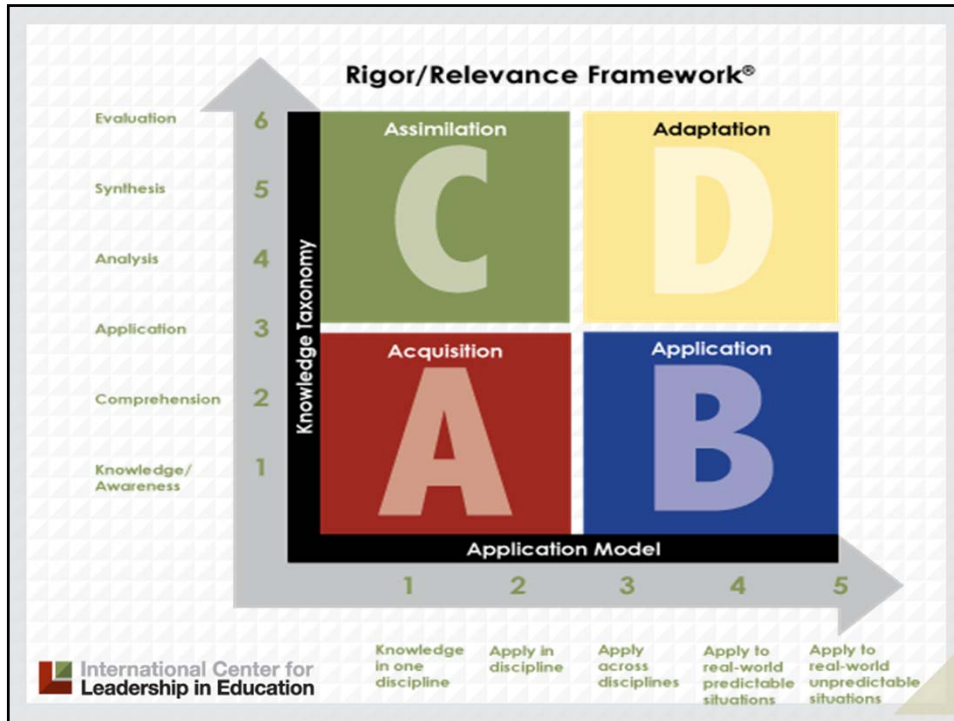


Cognitive Rigor Matrix

This matrix from the *Smarter Balanced Content Specifications for ELA* draws from both Bloom’s (revised) *Taxonomy of Educational Objectives* and Webb’s *Depth-of-Knowledge Levels* below.

Depth of Thinking (Webb) + Type of Thinking (Revised Bloom, 2001)	DOK Level 1 Recall & Reproduction	DOK Level 2 Basic Skills & Concepts	DOK Level 3 Strategic Thinking & Reasoning	DOK Level 4 Extended Thinking
Remember	- Recall, locate basic facts, definitions, details, events			
Understand	- Select appropriate words for use when intended meaning is clearly evident	- Specify, explain relationships - summarize - identify central ideas	- Explain, generate, or connect ideas using supporting evidence (quote, text evidence, example...)	- Explain how concepts or ideas specifically relate to other content domains or concepts
Apply	- Use language structure (prefix/suffix) or word relationships (synonym/antonym) to determine meaning	- Use context to identify word meanings - Obtain and interpret information using text features	- Use concepts to solve non-routine problems	- Devise an approach among many alternatives to research a novel problem
Analyze	- Identify the kind of information contained in a graphic, table, visual, etc.	- Compare literary elements, facts, terms, events - Analyze format, organization, & text structures	- Analyze or interpret author’s craft (e.g., literary devices, viewpoint, or potential bias) to critique a text	- Analyze multiple sources or texts - Analyze complex/ abstract themes
Evaluate			- Cite evidence and develop a logical argument for conjectures based on one text or problem	- Evaluate relevancy, accuracy, & completeness of information across texts/ sources
Create	- Brainstorm ideas, concepts, problems, or perspectives related to a topic or concept	- Generate conjectures or hypotheses based on observations or prior knowledge and experience	- Develop a complex model for a given situation - Develop an alternative solution	- Synthesize information across multiple sources or texts - Articulate a new voice, alternate theme, new knowledge or perspective





Content Specifications

<p>Grade 11 Summative Assessment Targets, Claim 1</p> <p style="text-align: center;">ELA/Literacy Claim #1</p> <p>Students can read closely and analytically to comprehend a range of increasingly complex literary and informational texts.</p>
<p style="text-align: center;">Grade 11</p> <p style="text-align: center;">Literary Texts</p>
<p>30% of text-related items will come from reading literary texts, and may include stories, poems, drama (comedies, tragedies), literary nonfiction, eighteenth-, nineteenth- and early-twentieth-century works of American literature</p>
<p>To the degree possible, all literary passages will include at least one item assessing each of the assessment targets (#1- #4) below.</p>
<p>SUPPORTING EVIDENCE: Cite specific textual evidence to support conclusions drawn from the text(s)</p> <p>Standards: RL-1</p> <p>(RL-1 is a component of each of the seven targets listed below.)</p> <p>RL-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 matters uncertain.</p>
<p>1. KEY DETAILS: Cite explicit textual evidence to support inferences made or conclusions drawn about texts</p> <p>Standards: RL-1, R-3</p> <p>(DOK 2¹)</p> <p>RL-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 matters uncertain.</p> <p>RL-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).</p>

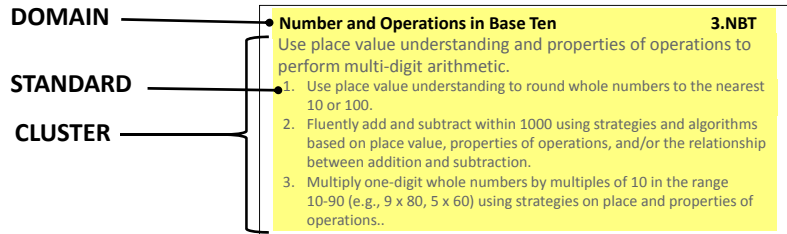


Grade 4 SUMMATIVE ASSESSMENT TARGETS	
ELA/Literacy Claim #1- <i>Literary Texts</i>	
Students can read closely and analytically to comprehend a range of increasingly complex literary and informational texts.	
50% of text-related assessment evidence will come from reading literary texts, and may include stories, poems, plays, myths, or legends	
To the degree possible, all literary passages will include at least one item assessing each of the assessment targets (#1-#4) below.	
<p>SUPPORTING EVIDENCE: Cite specific textual evidence to support conclusions drawn from the text(s) Standards: RL-1 (RL-1 is a component of each of the seven targets listed below.)</p> <p>1. KEY DETAILS: Use explicit details and implicit information from the text to support answers or basic inferences Standards: RL-1, RL-3 (DOK 1, DOK 2)</p> <p>2. CENTRAL IDEAS: Identify or summarize central ideas/ key events Standards: RL-2 (DOK 2)</p> <p>3. WORD MEANINGS: Determine intended meanings of words, including words with multiple meanings (academic/tier 2 words), based on context, word relationships (e.g., synonyms), word structure (e.g., common Greek or Latin roots, affixes), or use of resources (e.g., dictionary, thesaurus) Standards: RL-4; L-4, L-5c (DOK 1, DOK 2)</p>	<p>RL-1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.</p> <p>RL-1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.</p> <p>RL-3 Describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text (e.g., a character's thoughts, words, or actions).</p> <p>RL-2 Determine a theme of a story, drama, or poem from details in the text; summarize the text.</p> <p>RL-4 Determine the meaning of words and phrases as they are used in a text, including those that allude to significant characters found in mythology (e.g., Hercules).</p> <p>L-4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grade 4 reading and content</i>, choosing flexibly from a range of strategies.</p> <p>a. Use context (e.g., definitions, examples, or restatements in text) as a clue to the meaning of a word or phrase.</p> <p>b. Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., <i>telegraph, photograph, autobiography</i>).</p> <p>c. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.</p> <p>L-5c Demonstrate understanding of words by relating them to their opposites (antonyms) and to words with similar but not identical meanings (synonyms).</p>

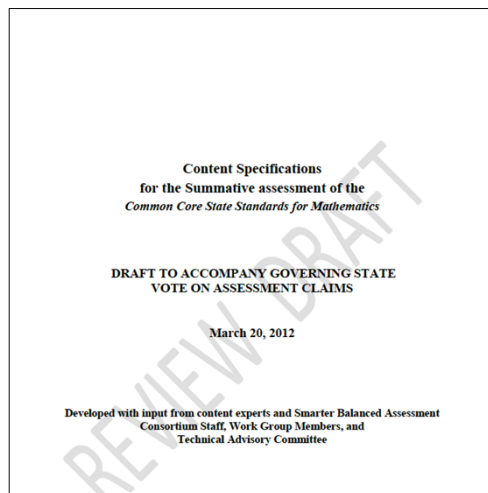
Structure of the *Common Core State Standards for Mathematics*

- Research-based learning progressions
- Internationally benchmarked
- Focused and coherent
- Standards for Mathematical Practice
 - Identify important processes and proficiencies
- Standards for Mathematical Content
 - Grade specific expectations

Structure of the *Common Core State Standards for Mathematics*



Smarter Balanced Assessment Consortium Mathematics Content Specifications



Structure of the *Smarter Balanced Assessment Consortium Mathematics Content Specifications*

- Introduction and Background
- General Considerations
- Claims and Assessment Targets
- Rationale and Evidence for Each Claim
- Cognitive Rigor Matrix / Depth of Knowledge



Cognitive Rigor and Depth of Knowledge

- The level of complexity of the cognitive demand.
 - Level 1: Recall and Reproduction
 - Requires eliciting information such as a fact, definition, term, or a simple procedure, as well as performing a simple algorithm or applying a formula.
 - Level 2: Basic Skills and Concepts
 - Requires the engagement of some mental processing beyond a recall of information.
 - Level 3: Strategic Thinking and Reasoning
 - Requires reasoning, planning, using evidence, and explanations of thinking.
 - Level 4: Extended Thinking
 - Requires complex reasoning, planning, developing, and thinking most likely over an extended period of time.



DOK Level? Grade 8

The total cost for an order of shirts from a company consists of the cost for each shirt plus a one-time design fee. The cost for each shirt is the same no matter how many shirts are ordered.

The company provides the following examples to customers to help them estimate the total cost for an order of shirts.

- 50 shirts cost \$349.50
- 500 shirts cost \$2370

Part A: Using the examples provided, what is the cost for each shirt, not including the one-time design fee? Explain how you found your answer.

Part B: What is the cost of the one-time design fee? Explain how you found your answer.



What Level DOK? Grade 8

Select all of the expressions that have a value between 0 and 1.

- $8^7 \square 8^{-12}$
- $\frac{7^4}{7^{-3}}$
- $\left(\frac{1}{3}\right)^2 \square \left(\frac{1}{3}\right)^9$
- $\frac{(-5)^6}{(-5)^{10}}$



DOK Level?
Grade 8

A cylindrical tank has a height of 10 feet and a radius of 4 feet. Jane fills this tank with water at a rate of 8 cubic feet per minute. How many minutes will it take Jane to completely fill the tank without overflowing at this rate?

Round your answer to the nearest minute.



DOK Level?
Grade 8

During the task, the student assumes the role of an architect who is responsible for designing the best plan for a park with area and financial restraints. The student completes tasks in which he/she compares the costs of different bids, determines what facilities should be given priority in the park, and then develops a scale drawing of the best design for the park and an explanation of the choices made. This investigation is done in class using a calculator, an applet to construct the scale drawing, and a spreadsheet.



Mathematics Assessment Claims

- Claim 1: Concepts and Procedures
 - Students can explain and apply mathematical concepts and interpret and carry out mathematical procedures with precision and fluency
- Claim 2: Problem Solving
 - Students can solve a range of complex well-posed problems in pure and applied mathematics, making productive use of knowledge and problem solving strategies
- Claim 3: Communicating Reasoning
 - Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others
- Claim 4: Modeling and Data Analysis
 - Students can analyze complex, real-world scenarios and can construct and use mathematical models to interpret and solve problems



Claim 1

Concepts and Procedures

Students can explain and apply mathematical concepts and interpret and carry out mathematical procedures with precision and fluency.

Grade Level	Number of Assessment Targets
3	11
4	12
5	11
6	10
7	9
8	10
11	16



Claim 1 Concepts and Procedures

Grade 4

Operations and Algebraic Thinking

Target A [m]: Use the four operations with whole numbers to solve problems. (DOK 1, 2)

Tasks for this target will require students to use the four operations to solve straightforward, one-step contextual word problems in situations involving equal groups, arrays, and finding an unknown number, including problems where the remainder must be interpreted. Some of these tasks will draw on contexts in 4.MD Target I using measurement quantities such as time, liquid volume, and masses/weights of objects, and money (with decimal representations limited to those described in standards 4.NF.6 and 4.NF.7).



Claim 1 Assessment Targets Grade 3

Operations and Algebraic Thinking

- A. Represent and solve problems involving multiplication and division.
- B. Understand properties of multiplication and the relationship between multiplication and division.
- C. Multiply and divide within 100.
- D. Solve problems involving the four operations, and identify and explain patterns in arithmetic.

Number and Operations – Base 10

- E. Use place value understanding and properties of arithmetic to perform multi-digit arithmetic.



Claim 1 Assessment Targets Grade 3

Numbers and Operations – Fractions

- F. Develop understanding of fractions as numbers.

Measurement and Data

- G. Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
 H. Represent and interpret data.
 I. Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
 J. Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

Geometry

- K. Reason with shapes and their attributes.



Grade 3

key: ■ Major clusters, ■ Supporting clusters, ■ Additional clusters

Operations and Algebraic Thinking

- Represent and solve problems involving multiplication and division.
- Understand properties of multiplication and the relationship between multiplication and division.
- Multiply and divide within 100.
- Solve problems involving the four operations, and identify and explain patterns in arithmetic.

Number and Operations in Base Ten

- Use place value understanding and properties of operations to perform multi-digit arithmetic.

Number and Operations—Fractions

- Develop understanding of fractions as numbers.

Measurement and Data

- Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
- Represent and interpret data.
- Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
- Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

Geometry

- Reason with shapes and their attributes.

GRADE 3				
Hi	75%	3.OA.B	Understand properties of <i>multiplication</i> and the relationship between multiplication and division	75%
		3.OA.C	Multiply and divide within 100	
		3.MD.C	Geometric measurement: understand concepts of area and relate area to multiplication and to addition	
		3.MD.A	Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects	
		3.OA.D	Solve problems involving the four operations, and identify and explain patterns in arithmetic ¹	
		3.NF.A	Develop understanding of fractions as numbers	25%
		3.OA.A	Represent and solve problems involving multiplication and division	
Lo	25%	3.NBT.A	Use place value understanding and properties of operations to perform multi-digit arithmetic	60%
		3.G.A	Reason with shapes and their attributes	
		3.MD.B	Represent and interpret data	40%
		3.MD.D	Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures	
121		Smarter Mathematics Content Specification Appendix A		Assessment Consortium

Sample for Grade 3, Claim #1 – Operations and Algebraic Thinking	
Adapting Items within a Claim & Domain	Claim #1 – Operations and Algebraic Thinking
$8 \times 5 = \square$	Target C [m]: Multiply and divide within 100.
$6 \times \square = 30$	Target A [m]: Represent and solve problems involving multiplication and division.
$9 \times 4 = \square \times 9$	Target B [m]: Understand properties of multiplication and the relationship between multiplication and division.
$6 \times 2 \times \square = 60$	Target B [m]: Understand properties of multiplication and the relationship between multiplication and division.
$4 \times 2 \times \square = 5 \times 2 \times 2 \times 2$	Target B [m]: Understand properties of multiplication and the relationship between multiplication and division.
$9 \times 4 = 4 \times \square \times \square$ (May appear as a drag and drop TE item where “1” is not one of the choices for dragging.)	Target B [m]: Understand properties of multiplication and the relationship between multiplication and division.

Claim 1 Assessment Targets Grade 4

Operations and Algebraic Thinking

- A. Use the four operations with whole numbers to solve problems.
- B. Gain familiarity with factors and multiples.
- C. Generate and analyze patterns.
- D. Generalize place value understanding for multi-digit whole numbers.
- E. Use place value understanding and properties of operations to perform multi-digit arithmetic.

Number and Operations – Fractions

- F. Extend understanding of fraction equivalence and ordering.
- G. Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.
- H. Understand decimal notation for fractions, and compare decimal fractions.



Claim 1 Assessment Targets Grade 4

Measurement and Data

- I. Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.
- J. Represent and interpret data.
- K. Geometric measurement: understand concepts of angle and measure angles.

Geometry

- L. Draw and identify lines and angles, and classify shapes by properties of their lines and angles.



Claim 1 Assessment Targets Grade 5

Operations and Algebraic Thinking

- A. Write and interpret numerical expressions.
- B. Analyze patterns and relationships.

Number and Operations – Base 10

- C. Understand the place value system.
- D. Perform operations with multi-digit whole numbers and with decimals to hundredths.

Number and Operations – Fractions

- E. Use equivalent fractions as a strategy to add and subtract fractions.
- F. Apply and extend previous understandings of multiplication and division to multiply and divide fractions.



Claim 1 Assessment Targets Grade 5

Measurement and Data

- G. Convert like measurement units within a given measurement system.
- H. Represent and interpret data.
- I. Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

Geometry

- J. Graph points on the coordinate plane to solve real-world and mathematical problems.
- K. Classify two-dimensional figures into categories based on their properties.



Claim 1 Assessment Targets Grade 6

Ratios and Proportional Relationships

- A. Understand ratio concepts and use ratio reasoning to solve problems.

The Number System

- B. Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
- C. Compute fluently with multi-digit numbers and find common factors and multiples.
- D. Apply and extend previous understandings of numbers to the system of rational numbers.



Claim 1 Assessment Targets Grade 6

Expressions and Equations

- E. Apply and extend previous understandings of arithmetic to algebraic expressions.
- F. Reason about and solve one-variable equations and inequalities.
- G. Represent and analyze quantitative relationships between dependent and independent variables.

Geometry

- H. Solve real-world and mathematical problems involving area, surface area, and volume.

Statistics and Probability

- I. Develop understanding of statistical variability.
- J. Summarize and describe distributions.



Claim 1 Assessment Targets Grade 7

Ratios and Proportional Relationships

- A. Analyze proportional relationships and use them to solve real-world and mathematical problems.

The Number System

- B. Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

Expressions and Equations

- C. Use properties of operations to generate equivalent expressions.
- D. Solve real-life and mathematical problems using numerical and algebraic expressions and equations.



Claim 1 Assessment Targets Grade 7

Geometry

- E. Draw, construct and describe geometrical figures and describe the relationships between them.
- F. Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

Statistics and Probability

- G. Use random sampling to draw inferences about a population.
- H. Draw informal comparative inferences about two populations.
- I. Investigate chance processes and develop, use, and evaluate probability models.



Claim 1 Assessment Targets Grade 8

The Number System

- A. Know that there are numbers that are not rational, and approximate them by rational numbers.

Expressions and Equations

- B. Work with radicals and integer exponents.
- C. Understand the connections between proportional relationships, lines, and linear equations.
- D. Analyze and solve linear equations and pairs of simultaneous linear equations.

Functions

- E. Define, evaluate, and compare functions.
- F. Use functions to model relationships between quantities.



Claim 1 Assessment Targets Grade 8

Geometry

- G. Understand congruence and similarity using physical models, transparencies, or geometry software.
- H. Understand and apply the Pythagorean theorem.
- I. Solve real-world and mathematical problems involving volume of cylinders, cones and spheres.

Statistics and Probability

- J. Investigate patterns of association in bivariate data.



Claim 1 Assessment Targets Grade 11

Number and Quantity

- A. Extend the properties of exponents to rational exponents.
- B. Use properties of rational and irrational numbers.
- C. Reason quantitatively and use units to solve problems.

Algebra

- D. Interpret the structure of expressions.
- E. Write expressions in equivalent forms to solve problems.
- F. Perform arithmetic operations on polynomials.
- G. Create equations that describe numbers or relationships.
- H. Understand solving equations as a process of reasoning and explain the reasoning.
- I. Solve equations and inequalities in one variable.
- J. Represent and solve equations and inequalities graphically.



Claim 1 Assessment Targets Grade 11

Functions

- K. Understand the concept of a function and use function notation.
- L. Interpret functions that arise in applications in terms of a context.
- M. Analyze functions using different representations.
- N. Build a function that models a relationship between two quantities.

Geometry

- O. Prove geometric theorems.

Statistics and Probability

- P. Summarize, represent and interpret data on a single count or measurement variable.



Claim 1: Concepts and Procedures Technology Enhanced (Grades 3 – 5)

The numbers 0 and $\frac{3}{5}$ are shown on the number line.
Put a point on the line to represent the number 1.

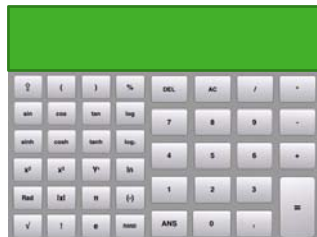


Claim 1: Concepts and Procedures Technology Enhanced (Grades 5 – 7)

$$1 \frac{2}{7} + 5 \frac{3}{8} = ?$$

$$1 \frac{2}{7} - 5 \frac{3}{8} = ?$$

Enter a key sequence that would allow you to perform these operations on the calculator.



Claim 1: Concepts and Procedures (Grades 7 – 11)

Give two solutions to the equation

$$4y = 7x - 8 \text{ when } 1 < x < 2.$$

(,) and (,)



Claim 1: Concepts and Procedures Multi-Part Selected Response (Grades 9-11)

Item Stem

For items 1a – 1e, determine whether each equation is True or False.

1a. $\sqrt{32} = 2^{\frac{5}{2}}$ True False

1b. $16^{\frac{3}{2}} = 8^2$ True False

1c. $4^{\frac{1}{2}} = \sqrt[4]{64}$ True False

1d. $2^8 = (\sqrt[3]{16})^6$ True False

1e. $(\sqrt{64})^{\frac{1}{3}} = 8^{\frac{1}{6}}$ True False



Claims 2, 3, and 4

- Assessment Targets for Claims 2, 3, and 4 are not divided into a grade-by-grade description.
- A general set of assessment targets applicable across grade levels.



Assessment Targets Claim 2 – Problem Solving

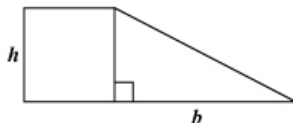
Claim 2: Students can solve a range of complex well-posed problems in pure and applied mathematics, making productive use of knowledge and problem solving strategies.

- A. Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace
- B. Select and use tools strategically
- C. Interpret results in the context of the situation
- D. Identify important quantities in a practical situation and map their relationships.



Claim 2: Problem Solving (Grades 9 – 11)

The figure below is made up of a square with height, h units, and a right triangle with height, h units, and base length, b units.



The area of this fig

Write an equation for the height, h , in terms of b . Show all work necessary to justify your answer.



Assessment Targets Claim 3 – Communicating Reason

Claim 3: Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.

- A. Test propositions or conjectures with specific examples.
- B. Construct, autonomously, chains of reasoning that justify or refute propositions or conjectures.
- C. State logical assumptions being used.
- D. Use the technique of breaking an argument into cases.
- E. Distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in the argument—explain what it is.
- F. Base arguments on concrete referents such as objects, drawings, diagrams, and actions.
- G. Determine conditions under which an argument does and does not apply.



Claim 3: Communicating Reasoning Constructed Response (Grades 3 – 5)

A tent is 8 feet by 10 feet. A sleeping bag is 3 feet by 6 feet. A camper says that 4 sleeping bags will fit in the tent because $18 + 18 + 18 + 18 = 72$. The tent is 80 square feet, so there is enough space.

- a. Is the camper correct? _____
- b. Explain.



Claim 3: Communicating Reasoning Constructed Response (Grades 3 – 5)

A teacher asked her students to use estimation to decide if the sum of the problem below is closer to 4,000 or 5,000.

$$496 + 1,404 + 2,605 + 489 =$$

One student replied that she thinks the sum is closer to 4,000. She used the estimation shown below to support her reasoning.

$$496 + 1,404 + 2,605 + 489 =$$

$$\begin{array}{ccccccc} \downarrow & & \downarrow & & \downarrow & & \downarrow \\ 0 & + & 1,000 & + & 3,000 & + & 0 = 4,000 \end{array}$$

Is the student's reasoning correct? In the space below, use numbers and words to explain why or why not. If the student's reasoning is not correct, explain how she should have estimated.



Multi-Claim Evidence Constructed Response (Grades 7 – 8)

In a sale, all prices are reduced by 25%.

1. Julie sees a jacket that cost \$32 before the sale. How much does it cost in the sale? Show your calculations.

In the second week of the sale, the prices are reduced by 25% of the previous week's price. In the third week of the sale, the prices are again reduced by 25% of the previous week's price. In the fourth week of the sale, the prices are again reduced by 25% of the previous week's price.

2. Julie thinks this will mean that the prices will be reduced to \$0 after the four reductions because $4 \times 25\% = 100\%$. Explain why Julie is wrong.
3. If Julie is able to buy her jacket after the four reductions, how much will she have to pay? Show your calculations.
4. Julie buys her jacket after the four reductions.
What percentage of the original price does she save? Show your calculations.



Assessment Targets Claim 4 – Modeling and Data Analysis

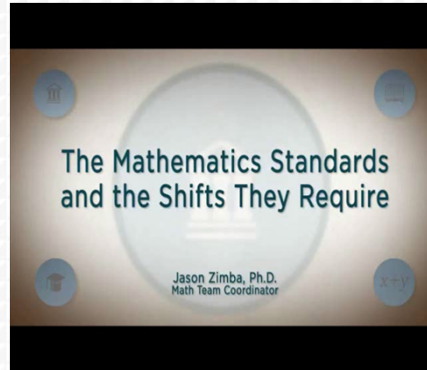
Claim 4: Students can analyze complex, real-world scenarios and can construct and use mathematical models to interpret and solve problems.

- A. Apply mathematics to solve problems arising in everyday life, society, and the workplace.
- B. Construct, autonomously, chains of reasoning to justify mathematical models used, interpretations made, and solutions proposed for a complex problem.
- C. State logical assumptions being used.
- D. Interpret results in the context of a situation.
- E. Analyze the adequacy of and make improvement to an existing model or develop a mathematical model of a real phenomenon.
- F. Identify important quantities in a practical situation and map their relationships.
- G. Identify, analyze, and synthesize relevant external resources to pose or solve problems.



The CCSS Requires Three Shifts in Mathematics

1. **Focus:** Focus strongly where the standards focus.
2. **Coherence:** *Think* across grades, and *link* to major topics
3. **Rigor:** In major topics, pursue *conceptual understanding*, procedural skill and *fluency*, and *application*

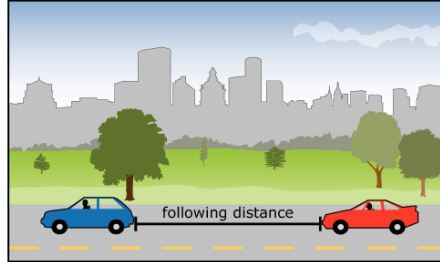


Reflection Questions for Sample Items

1. Does the item reflect the shifts called for by the standards? (focus, coherence, rigor)
2. If you answer yes or not sure, please describe why.
3. What are the instructional implications of the sample?

2 Second Rule

The “two-second rule” is used by a driver who wants to maintain a safe following distance at any speed. A driver must count two seconds from when the car in front of him or her passes a fixed point, such as a tree, until the driver passes the same fixed point. Drivers use this rule to determine the minimum distance to follow a car traveling at the same speed. A diagram representing this distance is shown.



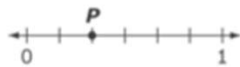
As the speed of the cars increases, the minimum following distance also increases. Explain how the “two-second rule” leads to a greater minimum following distance as the speed of the cars increases. As part of your explanation, include the minimum following distances, in feet, for cars traveling at 30 miles per hour and 60 miles per hour.



Elementary School Sample Item 1: 43044 Fractions 1

43044

Look at point P on the number line.



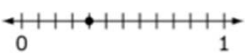

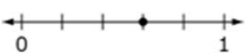


Look at number lines A – E. Is the point on each number line equal to the number shown by P ? Choose Yes or No.

A.		<input type="radio"/> Yes	<input type="radio"/> No
B.		<input type="radio"/> Yes	<input type="radio"/> No
C.		<input type="radio"/> Yes	<input type="radio"/> No
D.		<input type="radio"/> Yes	<input type="radio"/> No
E.		<input type="radio"/> Yes	<input type="radio"/> No

Source: Sample Item from Smarter Balanced website: <http://sampleitems.smarterbalanced.org/itempreview/sbac/index.htm>



Elementary School Sample Item 1: 43044 Fractions 1 – Answer

A.		<input checked="" type="radio"/> Yes	<input type="radio"/> No
B.		<input type="radio"/> Yes	<input checked="" type="radio"/> No
C.		<input type="radio"/> Yes	<input checked="" type="radio"/> No
D.		<input checked="" type="radio"/> Yes	<input type="radio"/> No
E.		<input type="radio"/> Yes	<input checked="" type="radio"/> No

Source: Sample Item from Smarter Balanced website: <http://sampleitems.smarterbalanced.org/Itempreview/sbac/index.htm>



Elementary School Sample Item 1: 43044 Fractions 1 – Alignment Discussion

Grade: 3

Claim 1: Concepts and Procedures, Target: 1F

CCSS: 3.NF.3a

This item demonstrates a shift in the standards, asking grade 3 students to understand that fractions are numbers, not just pizzas and pies.

Source: Sample Item from Smarter Balanced website: <http://sampleitems.smarterbalanced.org/Itempreview/sbac/index.htm>



ES Sample Item 2: 43048 Multiplication and Division

43048

Choose True or False for each equation.

A. $37 \times 4 = 1,480 \div 10$ True False

B. $215 \times 39 = 2,487 \div 3$ True False

C. $4,086 \times 7 = 32,202$ True False

D. $9,130 \times 86 = 785,180$ True False

Source: Sample Item from Smarter Balanced website: <http://sampleitems.smarterbalanced.org/itempreview/sbac/index.htm>



ES Sample Item 2: 43048 Multiplication and Division – Answer

A. $37 \times 4 = 1,480 \div 10$ True False

B. $215 \times 39 = 2,487 \div 3$ True False

C. $4,086 \times 7 = 32,202$ True False

D. $9,130 \times 86 = 785,180$ True False

Source: Sample Item from Smarter Balanced website: <http://sampleitems.smarterbalanced.org/itempreview/sbac/index.htm>



ES Sample Item 2: 43048 Multiplication and Division – Alignment Discussion

Grade: 5

Claim 1: Concepts and Procedures, Target: 1D

CCSS: 5.NBT.5, 5.NBT.6

This item provides one example of the expected fluencies for grade 5.



Source: Sample Item from Smarter Balanced website: <http://sampleitems.smarterbalanced.org/itempreview/sbac/index.htm>

ES Sample Item 3: 43051 Fractions 2b

43051



Five friends ordered 3 large sandwiches.

James ate $\frac{3}{4}$ of a sandwich.

Katya ate $\frac{1}{4}$ of a sandwich.

Ramon ate $\frac{3}{4}$ of a sandwich.

Sienna ate $\frac{2}{4}$ of a sandwich.

How much sandwich is left for Oscar?

1 2 3

4 5 6

7 8 9

0 . /



20

Source: Sample Item from Smarter Balanced website: <http://sampleitems.smarterbalanced.org/itempreview/sbac/index.htm>

ES Sample Item 3: 43051 Fractions 2b

43051



Five friends ordered 3 large sandwiches.

James ate $\frac{3}{4}$ of a sandwich.

Katya ate $\frac{1}{4}$ of a sandwich.

Ramon ate $\frac{3}{4}$ of a sandwich.

Sienna ate $\frac{2}{4}$ of a sandwich.

How much sandwich is left for Oscar?

1 2 3

4 5 6

7 8 9

0 . /

Source: Sample Item from Smarter Balanced website: <http://sampleitems.smarterbalanced.org/itempreview/sbac/index.htm>



20

Answer: $\frac{3}{4}$ of a sandwich is
Left for Oscar

ES Sample Item 3: 43051 Fractions 2b – Alignment Discussion

Grade: 4

Claim 2: Problem Solving, Target: 2A, 2D

CCSS: 4.NF.3

By grade 4, students should understand that each sandwich in this problem represents the same whole, and therefore operations with fractions can be used in solving this problem.

Source: Sample Item from Smarter Balanced website: <http://sampleitems.smarterbalanced.org/itempreview/sbac/index.htm>



Middle School Sample Item 1: 43056

Expressions and Equations 3

43056

For each linear equation in the table, select whether the equation has no solution, one solution, or infinitely many solutions.

Equation	No Solution	One Solution	Infinitely Many Solutions
$36x + 24 = 12(x + 2 + 2x)$			
$x = x + 1$			
$-12(x + 2) = -14x + 2$			

Source: Sample Item from Smarter Balanced website: <http://sampleitems.smarterbalanced.org/itempreview/sbac/index.htm>



Middle School Sample Item 1: 43056

Expressions and Equations 3 - Answer

43056

For each linear equation in the table, select whether the equation has no solution, one solution, or infinitely many solutions.

Equation	No Solution	One Solution	Infinitely Many Solutions
$36x + 24 = 12(x + 2 + 2x)$			✓
$x = x + 1$	✓		
$-12(x + 2) = -14x + 2$		✓	

Source: Sample Item from Smarter Balanced website: <http://sampleitems.smarterbalanced.org/itempreview/sbac/index.htm>



Middle School Sample Item 1: 43056

Expressions and Equations 3 – Alignment Discussion

Grade: 8

Claim 1: Concepts and Procedures, Target: 1D

CCSS: 8.EE.7a

In grade 6 students generate equivalent algebraic expressions, in grade 7 these are expanded to include expressions with rational coefficients, and in grade 8 students use earlier strategies to solve increasingly complex equations.



81

High School Sample Item 1: 42906

Rationals and Radicals

42906

- A. Drag into the box exactly three unique expressions whose sum is less than 10.
- B. Drag into the box exactly three unique expressions whose sum is between 10 and 20.
- C. Drag into the box exactly three unique expressions whose sum is greater than 20.

5√7
Delete

√13

$\frac{3^8}{3^6}$

20 - √20

$(4-2)^{-\frac{1}{2}}$

$8^{\frac{1}{3}}$

Source: Sample Item from Smarter Balanced website: <http://sampleitems.smarterbalanced.org/itempreview/sbac/index.htm>

High School Sample Item 1: 42906 Rationals and Radicals – Answer

42906

- A. Drag into the box exactly three unique expressions whose sum is less than 10.
- B. Drag into the box exactly three unique expressions whose sum is between 10 and 20.
- C. Drag into the box exactly three unique expressions whose sum is greater than 20.

5 $\sqrt{7}$
 $\sqrt{13}$
 $\frac{3^8}{3^6}$
 $20 - \sqrt{20}$
 $(4-2)^{-\frac{1}{2}}$
 $8^{\frac{1}{3}}$

A. Three unique expressions whose sum is less than 10

$8^{\frac{1}{3}}$ $(4-2)^{-\frac{1}{2}}$ $\sqrt{13}$

B. Three unique expressions whose sum is between 10 and 20

$\frac{3^8}{3^6}$ $\sqrt{13}$ $8^{\frac{1}{3}}$

C. Three unique expressions whose sum is greater than 20

$20 - \sqrt{20}$ $5\sqrt{7}$ $(4-2)^{-\frac{1}{2}}$



High School Sample Item 1: 42906 Rationals and Radicals – Alignment Discussion

Grade: HS

Claim 1: Concepts and Procedures, Target: 1A

CCSS: N-RN.1, 8.NS.2

This non-calculator item assesses students' understanding of number and quantity, which in high school includes expressions using radicals and rational exponents.



Source: Sample Item from Smarter Balanced website: <http://sampleitems.smarterbalanced.org/itempreview/sbac/index.htm>

Performance Tasks for English Language Arts and Mathematics



Performance Tasks

- Measure complex assessment targets
- Demonstrate ability to think and reason
- Higher-order skills
- Produce fully developed writing or speeches
- Provide evidence of college and career readiness



Performance Tasks Benefits

- Multiple approaches
- Use real world contexts
- Common language around learning



Limitations of Performance Tasks

- Administration time
- Human scoring



General Guidelines for Developing Performance Tasks

- Integrate knowledge and skills
- Measure understanding, research skills, analysis, and the ability to provide relevant evidence
- Require student to plan, write, revise, and edit
- Reflect a real-world task
- Demonstrate knowledge and skills
- Allow for multiple points of view
- Feasible for classroom environment



Combinations of Claims and Targets Measured

- Writing-narrative, research, possibly reading
- Writing-informational/explanatory, research, possibly reading
- Writing-argumentative, research, possibly reading
- Writing-opinions, research, possibly reading
- Speaking, research, reading, listening



General Specifications for Performance Tasks

- Allowable teacher and peer interactions and group work
- Organization of complex task directions
- Vocabulary
- Simulated Internet access
- Rubrics



Design of Performance Tasks

- Stimulate cognition
- Process information
- Produce extended response



Design of Performance Tasks

Use 1-2 Stimuli for Grade 3. Use up to 5 stimuli for high school.
Emphasis on stimuli related to science, history, and social studies.

Components of a Performance Task

Stimulus	Information Processing	Product/Performance
<ul style="list-style-type: none"> • Readings • Video clips • Audio clips • Graphs, charts, other visuals • Research topic/issue/problem • etc. 	<ul style="list-style-type: none"> • Research questions • Comprehension questions • Simulated Internet search • etc. 	<ul style="list-style-type: none"> • Essay, report, story, script • Speech with/without graphics, other media • Responses to embedded constructed response questions. • etc.



Test Administration

- Maximum Time Requirements for Performance Tasks

– Grade 3–8:

- **125 minutes total**

Classroom activity 20 min.

Part 1: 35 min.

Part 2: 70 min.

– High School:

- **140 minutes total**

Classroom activity 20 min.

Part 1: 35-45 min.

Part 2: 75-85 min.



Parts of Performance Task

- Part 1: Student reads research sources and responds to prompts (Claim 1 or 4)
- Part 2: Student plans, writes, and revises his or her full essay (Claim 2) or plans and delivers a speech (Claim 3)



Grade 4 Animal Defenses

1. Task Overview
2. Classroom Activity
3. Student Task: Part 1 & 2
4. Task Specifications and Scoring Rubrics



Grade 4 Animal Defenses Performance Task

- Task Overview (20 minutes)
- Classroom Activity
 - Preparation for Constructed Response Questions
 - 1. Be introduced to the concept of animal defenses
 - Be engaged in a compare and contrast group activity.
 - Be reminded of the qualities of an explanatory article or essay.



Grade 4 Animal Defenses Performance Task

- Purpose
 - Increase students basic understanding of the topic
 - Increases students ability to answer constructed response and performance task questions
 - Preparation for the kind of thinking and writing they will demonstrate



Grade 4 Animal Defenses Performance Task

- Teacher introduces topic with video stimulus "Animal Defenses"
- Teacher leads whole class discussion (questions provided)
- Students take notes based on their ideas and those expressed by classmates
- Students may refer to notes when they plan, draft and revise a multi-paragraph essay in Part 2



Grade 4 Animal Defenses Performance Task

- Question 1 : In the video "Animal Defenses," what were the animals defending themselves against?
- Question 2: How do these defenses help the animals protect themselves against enemies?



Grade 4 Animal Defenses Performance Task

- Teacher explains an explanatory essay:
 - Explains information clearly
 - Is well organized and stays on the topic
 - Provides evidence from the sources to support your main ideas
 - Uses clear language that suits your purpose
 - Follows rules of writing (spelling, capitalization, punctuation, and grammar)



Grade 4 Animal Defenses Performance Task

- Part 1 (35 minutes)
- Students read an article and watch a video about what animals do to defend themselves from danger.
- In Part 2 you will write an article that explains how some animals defend themselves.



Animal Defenses graphic organizer

Animal	Type of Defense



Grade 4 Animal Defenses Performance Task

- **Constructed Response Questions**

1. What does the article “Animal Roll-Ups” tell you about why some animals curl up? Use detail from the article to support your answer.

2. Think about the **armadillo** and the **hedgehog** described in the article “Animal Roll-Ups”. In what way are their defenses similar or different? Explain your answer using details from the article.

3. In the video “Animal Defenses” the **puffer fish** and the **crab** were both successful in protecting themselves from the same enemy – the sea otter. Do the puffer fish and the crab have the same type of defense? Explain your answer and include details from the video in your response.



Grade 4 Animal Defenses Performance Task

- **Part 2 (70 minutes)**
- **Assignment**
 - Your class is preparing a museum display that will include photos of a variety of animals and interesting facts about them. You have been asked to write an article for the museum display explaining about **animal defenses**.
 - Choose one animal from the article and one from the video, explain how each animal protects itself from its enemies, and explain how the two animals' defenses are similar to or different from one another. Include details from your sources.



Grade 4 Animal Defenses Performance Task

- **Now begin work**
 - Plan your article
 - Write your article
 - Revise and edit for a final draft
 - Teacher reminds them about a well-written explanatory article
 - Word processing and spell check are available
 - Type your response in the space provided, not limited to this space



Grade 4 Animal Defenses Performance Task

- **Task Specifications**
- **Claim – 2. Writing and 4. Research**
- **Targets: Compose full text, language and vocabulary use, edit/clarify, interpret and integrate information; analyze information/sources**
- **CCSS – W-8, W-9**
- **DOK 4**
- **Points up to 10**
- **Accommodations**
- **Stimuli**



Scoring Information

- **How your essay will be scored:**
The people scoring your essay will be assigning scores for:
 - **Statement of purpose/focus**—how well you clearly state your claim on the topic, maintain your focus, and address the alternate and opposing claims
 - **Organization**—how well your ideas logically flow from the introduction to conclusion using effective transitions, and how well you stay on topic throughout the essay
 - **Elaboration of evidence**—how well you provide evidence from sources about your opinions and elaborate with specific information
 - **Language and Vocabulary**—how well you effectively express ideas using precise language that is appropriate for your audience and purpose
 - **Conventions**—how well you follow the rules of usage, punctuation, capitalization, and spelling



Analyzing a Performance Task



Performance Task

1. Review the Task Garden of Learning or Taking a Field Trip
2. What is the claim?
3. What are the targets?
4. What will teachers need to implement these types of assessments?



Mathematics Performance Task

- Planting Tulips
 1. Classroom Activity
 2. Student Task
 3. Task Specifications
 4. Scoring Rubric



Classroom Activity

- Performance task span different parts of the assessment system (summative, interim, and as part of the digital library of resources)
- Ideas for teachers:
 - Bring in actual bulbs
 - Show video on planting bulbs
 - Demonstrate how to measure them
 - Create a planter with tape on the floor

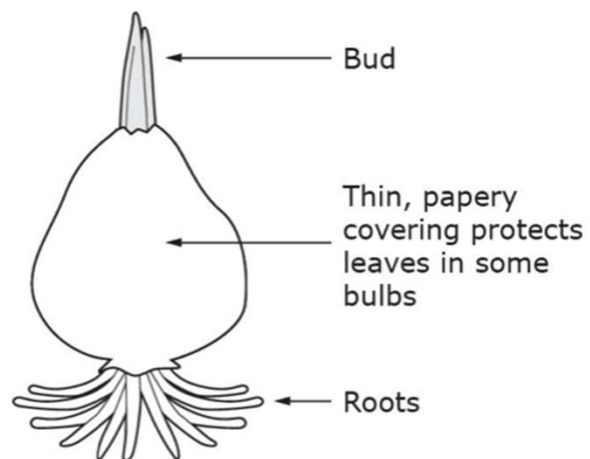


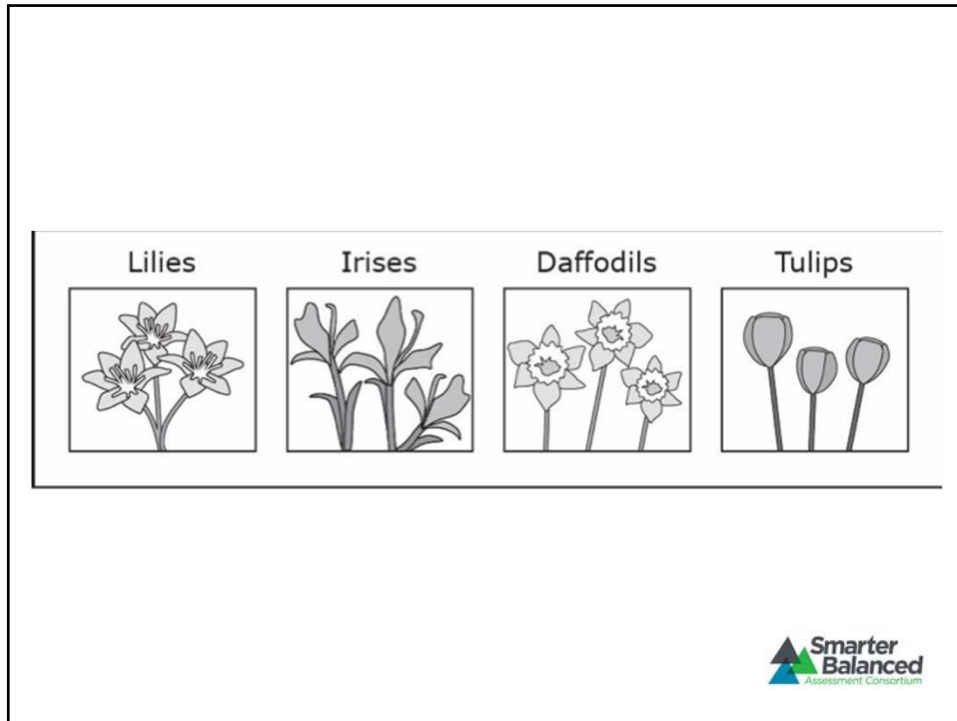
Classroom Activity

- Set the context:
 - School to build planters
 - They've been selected to select the design of planter and what to plant
 - What to plant
 - Discuss different plants, show bulbs



Sprouting Bulb





Classroom Activity

- Measurement
 - What tool to use
- Calculations
 - 2-inch bulb width \times 3 = 6 inches of space between the bulbs
 - 2-inch bulb width + 6 inches between bulbs = total space of 8 inches for each bulb

Students work in pairs to complete the table

Tulip	Width of Bulb (in)	Spacing between Bulbs (in)	Total Space Needed (in)
A	1		
B	2		
C	3		
D	4		



Performance Task

- Students will decide the shape of the planters and how many tulips to plant in each



Working with Measurements

1. Bernard and Sara recommend a rectangular planter that is 5 feet long and 2 feet wide. Bernard says that it will be easier to figure out how many tulips to plant if the measurements are in inches.



Fill in the blanks to show the number of inches for each measurement.

Length: 5 feet = _____ inches

Width: 2 feet = _____ inches

**Figuring Out Digging Depth**

2. The class will need to dig a hole to a depth of at least twice the length of the tulip bulb. Rosa measures the length of two different tulip bulbs. She finds one is $1\frac{1}{2}$ inches long and the other is $2\frac{1}{2}$ inches long.

Sam thinks that they should dig all of the holes 3 inches deep, but Rosa says that 3 inches is not deep enough. Who do you think is correct? Explain your reasoning.

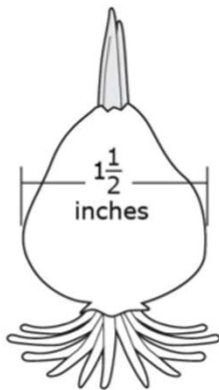


Bulbs in the Rectangular Planter

3. The class finds a bag containing bulbs that are each $1\frac{1}{2}$ inches wide and decides to use them in their rectangular planter. Following the planting guidelines, answer the questions and show your calculations.

PLANTING GUIDELINES: The distance between tulip bulbs should be 3 times the width of the bulb.

- A. This picture shows a tulip bulb that is $1\frac{1}{2}$ inches wide. Use your ruler and mark an "X" where the next bulb could be planted.

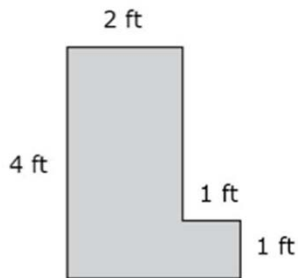


- B. Using your drawing, calculate the total length of space that is needed for each bulb with a $1\frac{1}{2}$ -inch width. Your answer should include the width of the bulb shown.
- C. How many tulip bulbs with a $1\frac{1}{2}$ -inch width can be planted in a single row that is 5 feet long?
- D. How many tulip bulbs with a $1\frac{1}{2}$ -inch width can be planted in a single column that is 2 feet long?
- E. How many total tulip bulbs with a $1\frac{1}{2}$ -inch width can be planted in the 5-foot by 2-foot rectangular planter? Explain or show your reasoning.



Selecting a Planter

4. Edward thinks that the L-shaped planter shown will hold more tulip bulbs than the 5-foot by 2-foot planter.



Following the same planting guidelines, how many tulip bulbs with a $1\frac{1}{2}$ -inch width can the L-shaped planter hold?

Which planter shape (rectangle or L-shaped) holds more tulip bulbs? Explain or show your reasoning.



Task Specifications

- Domains:
 - Operations and Algebraic Thinking;
 - Number and Operations—Fractions;
Measurement and Data



Assessment Targets

- Claim 1 Target I: Problem Solving with measurement
- Claim 3 Target E: Distinguish correct logic or reasoning from that which is flawed
- Claim 3, Target B: Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures.



Assessment Targets

- Claim 2, Target D: Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas).
- Claim 2, Target B: Select and use appropriate tools strategically.
- Claim 2, Target A: Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace.



Assessment Targets

- Claim 3, Target A: Test propositions or conjectures with specific examples.
- Claim 3, Target D: Use the technique of breaking an argument into cases.



Purpose of Task

- The purpose of this task is to assess student's ability to problem solve with fractions in the context of area/space.



Scoring Criteria for Planting Tulips Task

Scorable Parts	Points	Claims
1. Bernard says that it will be easier to figure out how many tulips to plant if the measurements are in inches.	0–2 Points Full credit for correctly converting feet to inches for both lengths. Accept other valid responses.	Contributes evidence to Claim 1, Concepts and Procedures
2. Sam thinks that they should dig all of the holes 3 inches deep, but Rosa says that 3 inches is not deep enough. Who do you think is correct? Explain your reasoning.	0–2 Points Full credit for stating Rosa is correct because the $2\frac{1}{2}$ -inch bulb will need a hole 5 inches deep. Three inches is not deep enough.	Contributes evidence to Claim 3, Communicating Reasoning



<p>3.</p> <p>A. Use your ruler and mark an "X" where the next bulb could be planted.</p> <p>B. Using your drawing, calculate the total length of space that is needed for each bulb with a $1\frac{1}{2}$-inch width.</p> <p>C. How many tulip bulbs with a $1\frac{1}{2}$-inch width can be planted in a single row that is 5 feet long?</p> <p>D. How many tulip bulbs with a $1\frac{1}{2}$-inch width can be planted in a single column that is 2 feet long?</p> <p>E. How many total tulip bulbs with a $1\frac{1}{2}$-inch width can be planted in the 5-foot by 2-foot rectangular planter? Explain or show your reasoning.</p>	<p>0–6 Points</p> <p>Full credit for:</p> <p>Marking an "X". There should be 3 inches between the edge of the bulb and the edge of "X".</p> <p>Finding 6 inches as the total length of space needed per bulb.</p> <p>Finding 10 bulbs will fit in a 5-foot long row.</p> <p>Finding 4 bulbs will fit in a 2-foot long column.</p> <p>Finding 40 total bulbs will fit in the 5-foot by 2-foot planter.</p>	<p>Contributes evidence to Claim 2, Problem Solving</p>
--	---	---

Practice Test Released

May 29, 2013



Practice Test

- The Practice Tests will:
- Be available for grades 3–8 and 11 in both English language arts and mathematics;
- Follow the planned Smarter Balanced test blueprints, making the Practice Test experience very similar to the assessment experience in 2014-15;
- Afford teachers, administrators, and parents access to items planned and designed for the Smarter Balanced assessment;
- Allow students to access the tests over the summer, with the Practice Test available right up to rollout of the operational assessment;



Practice Test

- Use the full array of item types including performance tasks; and
- Make available versions that demonstrate several accommodations:
 - Text-to-speech,
 - Item-level pop-up Spanish glossaries for construct irrelevant terms (math tests only),
 - Braille, and
 American Sign Language (ASL)



Practice Test

- Accommodated forms will be released in phases across the listed grade/content combinations:
- Phase 1, May 29: All accommodations for non-performance task items (with the exception of ASL) in grades 3, 7, and 11 math; and grades 4, 7, and 11 ELA
- Phase 2 (TBD): All accommodations for non-performance task items (with the exception of ASL) in grades 4, 5, 6, and 8 math; and grades 3, 5, 6, and 8 ELA
- Phase 3 (TBD): ASL accommodation in all grades and content areas



Smarter Balanced Practice Test

- <http://www.smarterbalanced.org/pilot-test/>



Find Out More

Smarter Balanced
can be found
online at:

SmarterBalanced.org



International Center for Leadership in Education

1587 Route 146

Rexford, NY 12148

Phone (518) 399-2776

Fax (518) 399-7607

E-mail - info@LeaderEd.com

www.LeaderEd.com

sgendron@leadered.com