CCSS Websites and Resources

Illustrative Mathematics Website

http://illustrativemathematics.org

A work in progress

Designed to provide examples that help to clarify what each CCSS means

Inside Mathematics Website

http://www.insidemathematics.org

New resources on Common Core Standards for Mathematical Practice, including:

- Classroom video examples illustrating the math practice standards, including commentary
- Videos of exemplary lessons integrating multiple math practices

New resources on Common Core Standards for Mathematical Content, including:

Common Core-aligned tasks, searchable either by grade level or by Common Core content area, such as "Operations and Algebraic Thinking," or "Geometry - Congruence."

Additional classroom videos of Number Talks

Four new classroom videos of "Number Talks" showing students engaged in mental math exercises and conversations about math, including one from a bilingual Spanish-English classroom.

NCTM Illuminations Website

http://illuminations.nctm.org/

National Council of Teachers of Mathematics

Contains activities, lessons and links related to the CCSS

Common Core Flip Books

http://katm.org/wp/wp-content/uploads/ flipbooks

Grade level books with additional examples, strategies and ideas for teaching the CCSS-M

Smarter Balanced Assessment Consortium Website

Sample Items

http://www.smarterbalanced.org/smarter-balanced-assessments/

Scroll down to "Mathematics"

Find "Mathematics 3-5" (ZIP) or "Mathematics 6-8"

Folder of currently released sample assessment items for the 4 claims

Practice Tests

https://sbacpt.tds.airast.org/student/

California Department of Education

Common Core State Standards – Mathematics

http://www.cde.ca.gov/be/st/ss/documents/ccssmathstandardaug2013.pdf

Mathematics Framework

http://www.cde.ca.gov/ci/ma/cf/draft2mathfwchapters.asp

Andrea and Diana’s Money

Andrea and Diana each had the same amount of money. Andrea spent $58 to fill the car up with gas for a road-trip. Diana spent $37 buying snacks for the trip. Afterward, Andrea had $\frac{1}{4}$ as much money as Diana had. How much money did each have at first?

Standards of Student Practice in Mathematics Proficiency Matrix

	Students:	(I) = Initial	(IN) = Intermediate	(A) = Advanced
1a	**Make sense of problems**	Explain their thought processes in solving a problem one way. *(Pair – Share)*	Explain their thought processes in solving a problem and representing it in several ways. *(Question/Wait time)*	Discuss, explain, and demonstrate solving a problem with multiple representations and in multiple ways. *(Grouping/Engaging)*
1b	**Persevere in solving them**	Stay with a challenging problem for more than one attempt. *(Question/Wait time)*	Try several approaches in finding a solution, and only seek hints if stuck. *(Grouping/Engaging)*	Struggle with various attempts over time, and learn from previous solution attempts. *(Show Thinking)*
2	**Reason abstractly and quantitatively**	Reason with models or pictorial representations to solve problems. *(Grouping/Engaging)*	Are able to translate situations into symbols for solving problems. *(Grouping/Engaging)*	Convert situations into symbols to appropriately solve problems as well as convert symbols into meaningful situations. *(Encourage Reasoning)*
3a	**Construct viable arguments**	Explain their thinking for the solution they found. *(Show Thinking)*	Explain their own thinking and thinking of others with accurate vocabulary. *(Question/Wait time)*	Justify and explain, with accurate language and vocabulary, why their solution is correct. *(Grouping/Engaging)*
3b	**Critique the reasoning of others.**	Understand and discuss other ideas and approaches. *(Pair – Share)*	Explain other students' solutions and identify strengths and weaknesses of the solution. *(Question/Wait time)*	Compare and contrast various solution strategies and explain the reasoning of others. *(Grouping/Engaging)*

4	**Model with Mathematics**	Use models to represent and solve a problem, and translate the solution to mathematical symbols. *(Grouping/Engaging)*	Use models and symbols to represent and solve a problem, and accurately explain the solution representation. *(Question/Prompt)*	Use a variety of models, symbolic representations, and technology tools to demonstrate a solution to a problem. *(Show Thinking)*
5	**Use appropriate tools strategically**	Use the appropriate tool to find a solution. *(Grouping/Engaging)*	Select from a variety of tools the ones that can be used to solve a problem, and explain their reasoning for the selection. *(Grouping/Engaging)*	Combine various tools, including technology, explore and solve a problem as well as justify their tool selection and problem solution. *(Show Thinking)*
6	**Attend to precision**	Communicate their reasoning and solution to others. *(Show Thinking)*	Incorporate appropriate vocabulary and symbols when communicating with others. *(Allowing Struggle)*	Use appropriate symbols, vocabulary, and labeling to effectively communicate and exchange ideas. *(Encourage Reasoning)*
7	**Look for and make use of structure**	Look for structure within mathematics to help them solve problems efficiently (such as 2 x 7 x 5 has the same value as 2 x 5 x 7, so instead of multiplying 14 x 5, which is (2 x 7) x 5, the student can mentally calculate 10 x 7. *(Question/Prompt)*	Compose and decompose number situations and relationships through observed patterns in order to simplify solutions. *(Allowing Struggle)*	See complex and complicated mathematical expressions as component parts. *(Encourage Reasoning)*
8	**Look for and express regularity in repeated reasoning**	Look for obvious patterns, and use if/ then reasoning strategies for obvious patterns. *(Grouping/Engaging)*	Find and explain subtle patterns. *(Allowing Struggle)*	Discover deep, underlying relationships, i.e. uncover a model or equation that unifies the various aspects of a problem such as discovering an underlying function. *(Encourage Reasoning)*

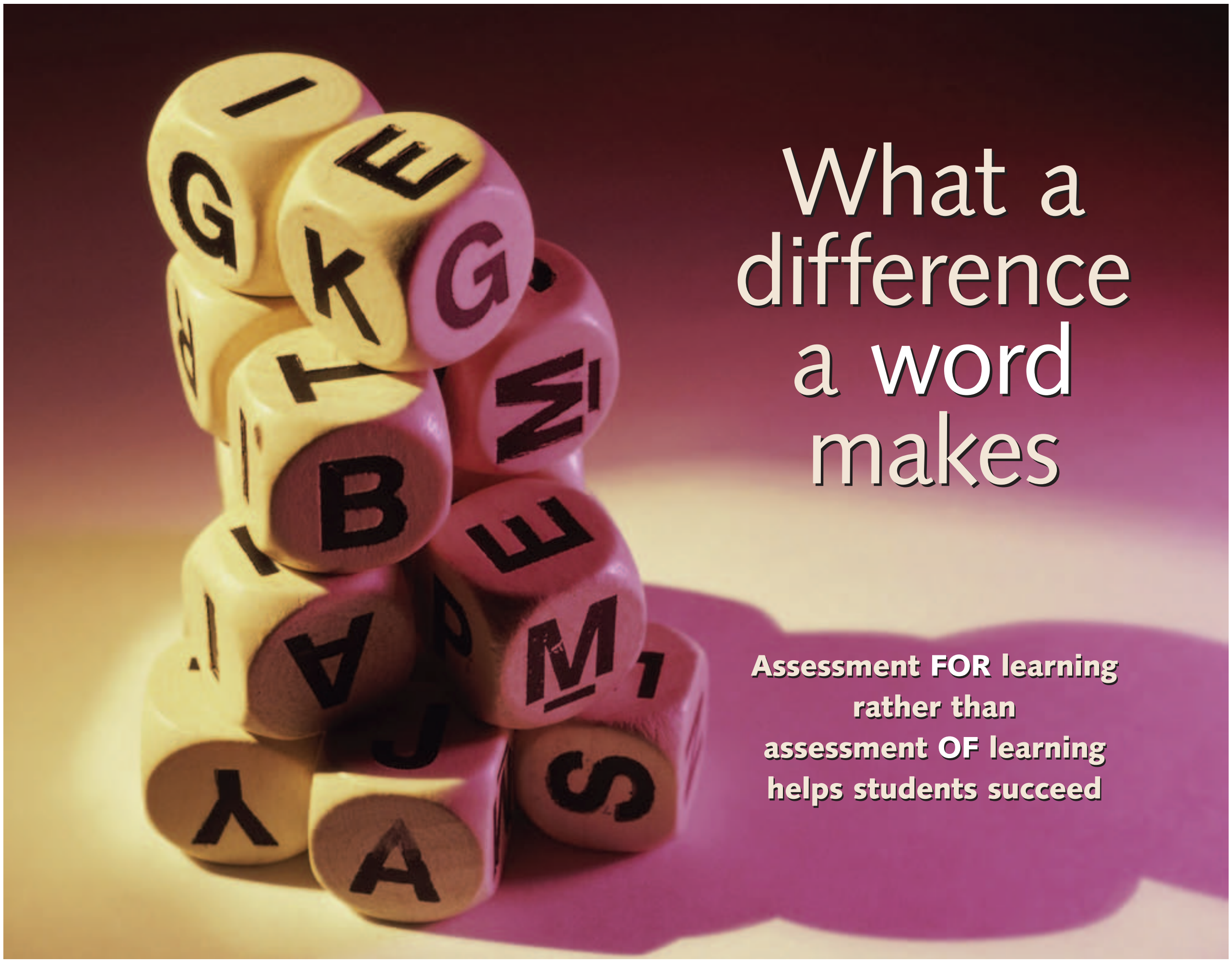
“Assessment should allow all students to show what they know, understand and can do.”

(Cockcroft Report 1982)

“Assessment for learning is one of the most powerful ways of improving learning and raising standards“

(Black and Wiliam 1998)

High quality assessment has:	Contra-indicators
Curriculum balance Assessment should be based on a balanced set of tasks that, together, provide students with accessible opportunities to perform across all the types of performance your curriculum goals are seeking.	*A narrowed range of task types assessing separate elements of performance. Use of correlation in claiming validity. Modes of working on the task that differ from the target performances (eg multiple choice by elimination)*
Curriculum value Assessment tasks should constitute worthwhile learning activities in their own right. "Teaching to the test" then becomes desirable.	*Time spent preparing for the test is seen by teachers as an unwelcome distraction from their main job - to educate.*
Fitness for purpose The nature of the tasks and scoring should correspond to the purposes of the assessment. *Summative assessment* celebrates and summarises a wide range of performance. It should assess students' ability to integrate all that they know, understand and can do within tasks of significance. Fluency, understanding, and the ability to deploy problem solving strategies should be included in all tasks. Scoring requires only a few valid and reliable measures aggregated across the elements of performance on a balanced set of tasks. *Formative assessment* involves, in addition, some more focused tasks that identify learning obstacles and show *how* to bridge the gap between current and desired levels of knowledge. Both strengths and weaknesses are identified. "Measurement accuracy” has low priority.	*Simplicity (e.g. machine scoring) is given a priority that is allowed to distort the feedback needed (and, often, the task set)* *More attention to the statistical properties of the scores than to the range and balance of what is being assessed, and the depth of the scoring judgments. ($1 per student precludes validity. No system works well with <5% of total expenditure on feedback)* *Feedback that shows that giving summative information (e.g.scores) to the student distracts them from using the feedback for constructive improvement, moving them to competitive “ego” mode.*



What a difference a word makes

Assessment FOR learning rather than assessment OF learning helps students succeed

BY RICK STIGGINS AND JAN CHAPPUIS

Without question, assessment remains among the very hottest topics in school improvement. High-stakes state accountability assessments and adequate yearly progress continue to represent the driving forces of school improvement these days. But, as accountability systems evolve, attention to this topic has turned in an interesting direction. Educators have concluded that testing once a year does not provide sufficient evidence to inform many crucial, more frequently made instructional decisions, which has generated renewed interest in *formative assessment*.

Traditionally, the term has referred to assessments used to support learning. But, in the current environment, formative assessment as defined by the test publishers has taken on a narrow meaning. In this context, it refers to a system of more frequent summative assessments administered at regular intervals (often quarterly) to determine which students have not yet met state standards — an early warning system, if you will.

We both applaud and, at the same time, challenge this thinking. On the one hand, it helps us identify students who need help when we still have time to help them. On the other hand, while this very expensive assessment process helps us identify the problem, it doesn't help those students find greater success. For that, we must expand our definition. Enter *assessment for learning*.

Assessment *for* learning happens in the classroom and involves students in every aspect of their own assessment to build their confidence and maximize their achievement. It rests on the understanding that students, not just adults, are data-driven instructional decision makers. Several key features differentiate assessment *for* learning from formative assessment as currently being sold by test publishers: To begin with, state standards are deconstructed into classroom-level learning targets, which we translate into language our students understand so they know what they are responsible for learning. In addition, we turn those classroom-level targets into dependably accurate classroom assessments, aspects of which we integrate into daily instruction. In short, everyone understands the definition of success from the outset and we generate an ongoing flow of descriptive feedback that permits students to watch themselves grow. In this case, students and their teachers become partners in the classroom assessment process, relying on student-involved assessment, record keeping, and communication to help students understand what success looks like, see where they are now, and learn to close the gap between the two.

The good news is that research has shown for years that consistently applying principles of assessment *for* learning has yielded remarkable, if not unprecedented, gains in student achievement, especially for low achievers (Black & Wiliam, 1998). Results verify positive impacts across grade levels and school subjects.

However, the troubling news is that we weren't given the opportunity to learn to apply principles of assessment *for* learning during our preparation to teach. It remains the case that colleges of education often fail to include this kind of assessment training in their programs. And lest we believe that teachers can turn to their principals for assistance in this regard, be advised that assessment training of any sort remains virtually nonexistent in leadership training programs across the nation.

RICK STIGGINS is the founder of Assessment Training Institute and JAN CHAPPUIS is a professional development associate at ATI. You can contact them at the Assessment Training Institute, 317 S.W. Alder St., Suite 1200, Portland, OR 97204, phone (800) 480-3060, fax (503) 228-3014, e-mail: ati@assessmentinst.com.

We know what teachers need to know and understand to apply principles of assessment *for* learning effectively in their classrooms. We know what will happen to their students' confidence, motivation, and achievement if they learn those lessons. We know how to deliver these tools to their hands in an efficient and effective manner.

Research has shown that consistently applying principles of assessment *for* learning has yielded remarkable, if not unprecedented, gains in student achievement.

Competence in assessment *for* learning

The chart on p. 12 details five keys to classroom assessment quality, with each broken down into specific competencies teachers need to master

Sound classroom assessment practice

1. Clear purposes Assessment processes and results serve clear and appropriate purposes.	a. Teachers understand who uses classroom assessment information and know their information needs. b. Teachers understand the relationship between assessment and student motivation and craft assessment experiences to maximize motivation. c. Teachers use classroom assessment processes and results formatively (assessment *for* learning). d. Teachers use classroom assessment results summatively (assessment *of* learning) to inform someone beyond the classroom about students' achievement at a particular point in time. e. Teachers have a comprehensive plan over time for integrating assessment *for* and *of* learning in the classroom.
2. Clear targets Assessments reflect clear and valued student learning targets.	a. Teachers have clear learning targets for students; they know how to turn broad statements of content standards into classroom-level learning targets. b. Teachers understand the various types of learning targets they hold for students. c. Teachers select learning targets focused on the most important things students need to know and be able to do. d. Teachers have a comprehensive plan over time for assessing learning targets.
3. Sound design Learning targets are translated into assessments that yield accurate results.	a. Teachers understand the various assessment methods. b. Teachers choose assessment methods that match intended learning targets. c. Teachers design assessments that serve intended purposes. d. Teachers sample learning appropriately in their assessments. e. Teachers write assessment questions of all types well. f. Teachers avoid sources of mismeasurement that bias results.
4. Effective communication Assessment results are managed well and communicated effectively.	a. Teachers record assessment information accurately, keep it confidential, and appropriately combine and summarize it for reporting (including grades). Such summary accurately reflects current level of student learning. b. Teachers select the best reporting option (grades, narratives, portfolios, conferences) for each context (learning targets and users). c. Teachers interpret and use standardized test results correctly. d. Teachers effectively communicate assessment results to students. e. Teachers effectively communicate assessment results to a variety of audiences outside the classroom, including parents, colleagues, and other stakeholders.
5. Student involvement Students are involved in their own assessment.	a. Teachers make learning targets clear to students. b. Teachers involve students in assessing, tracking, and setting goals for their own learning. c. Teachers involve students in communicating about their own learning.

SOURCE: *Classroom Assessment for Student Learning: Doing it Right—Using it Well* by Richard Stiggins, Judy Arter, Jan Chappuis, and Steve Chappuis. (Portland, OR: Assessment Training Institute, 2004). Reprinted with permission.

to tap the full potential of assessment *for* learning (Stiggins, Arter, Chappuis, & Chappuis, 2004).

First, we need to know why we're assessing. If assessment is the process of gathering evidence to inform instructional decisions, teachers must begin the assessment process by asking:

- What decisions?
- Who's making the decisions?
- What kind of information will be helpful?

The assessment must produce that information, and it must take into account the needs of the student as a crucial decision maker.

Second, quality assessments can arise only from a clear vision of the achievement to be mastered. We cannot dependably assess targets we have not completely defined and mastered ourselves. Neither can we communicate them clearly to students.

Third, we develop and use assessments in a manner that yields accurate results. We select proper assessment methods, high-quality items and scoring guides, and plan for careful sampling of achievement. And we minimize distortion in results due to bias.

Fourth, results must feed into

effective communication systems that deliver accurate information into the hands of the intended user(s) in a timely and understandable manner. For students, this includes receiving descriptive feedback while there is still time to use it to improve.

And finally, students must be taught the skills they need to be in control of their own ultimate academic success: self-assessment and goal setting, reflection, keeping track of and sharing their learning.

Becoming competent in assessment *for* learning — what won't work and why

No Child Left Behind has lit an assessment fire in our nation: All things assessment-related sell fast. But we can't buy assessments that will circumvent teachers' need for deeper assessment expertise. Off-the-shelf assessments may be marketed as "formative assessments," but they don't help teachers understand or apply the strategies that have been proven to increase student learning. They do not show teachers how to make learning targets clear to students, or how to help students differentiate between strong and weak work. They do not help teachers understand what kinds of feedback are most effective or how to find the time to provide that feedback. They do not help teachers show students how to assess their own strengths and weaknesses, nor do they emphasize the motivational power of having students track and share their learning. They cannot substitute for the professional development needed to cause changes in assessment practice in the classroom.

Neither can we "workshop" our way to assessment competence. A professional development model designed to provide a quick workshop fix or to economize on time at the expense of deep understanding will fail. Developing assessment expertise goes beyond teaching people how to create a test. It goes beyond showing how to convert rubric scores to grades or how to develop a standards-based report card. It examines well-established assessment practices that are harmful to students and their learning, like factoring practice work (such as homework) in the final grade, giving tests without first understanding what specific learning each item addresses, and keeping students in the dark about the learning for which they are responsible.

If teachers assign lower grades to late work, give zeros for cheating, or factor attendance into grades, a workshop on grading is unlikely to change such unsound practice. It takes an ongoing investment of cognitive effort for teachers to think and come to embrace arguments for not doing these things, to discuss reasons for wanting to continue those grading practices, and to work out acceptable substitutes that both hold students accountable for developing good work habits and communicate effectively about those work habits.

Students must be taught the skills they need to be in control of their own ultimate academic success: self-assessment and goal setting, reflection, keeping track of and sharing their learning.

Changing habits is not easy. It takes work in and out of class to build assessment *for* learning environments that meet the student's information needs along with the teacher's. Increasing descriptive feedback while reducing evaluative feedback means that the teacher must figure out ways to comment on the quality of student work and then schedule time for students to act on that feedback before being graded. Teaching students to assess their own work takes class time as well as practice. It is difficult to delete content coverage in order to accommodate these activities on a regular basis — there is already more to teach than there is time.

Developing assessment competencies requires that people rethink both what they do now and what beliefs led them to adopt those practices. It requires that they make decisions about what to give up and what to retool. The workshop model of professional development cannot offer the support needed for such changes.

What will work? Learning teams

In the learning team approach to professional development, participants engage in a combination of independent study and ongoing small-group collaboration with a commitment to helping all group members develop classroom assessment expertise. The process begins with an infusion of new ideas that can come from several sources: attending workshops, reading books and articles, watching videos, and observing other teachers at work. It continues with ongoing opportunities to discuss and work through the cognitive consonance and dissonance that arise when practice and beliefs conflict. But most importantly, it requires that each team member transform new assessment ideas into actual classroom practices with which they experiment. In this way, they and their students learn valuable lessons about what works for them and why.

Few teachers currently use the words "assessment" and "joy" in the same sentence.

When the experiences of such hands-on learning are shared among teammates in regular team meetings, all members benefit from the lessons of each partner. When teams commit to shaping the ideas into new classroom practice, reflecting on the results, and sharing the benefits with each other, professional growth skyrockets. Teams reach their ultimate goal of changing classroom assessment practices in specific ways that benefit students.

This is challenging work and can be even painful at times; few teachers currently use the words "assessment" and "joy" in the same sentence. Yet if we don't begin this dialogue, this study of assessment *for* learning, we are relegating assessment to its accountability role and passing up its potential benefits to students. Let us fundamentally rethink how assessment is used in our classrooms, eliminate its negative effects on students, and act collaboratively to ensure that our classroom assessment practices maximize, not just measure, our students' achievement.

Resources in assessment *for* learning

Research on assessment's impact on student achievement:

- "Creating a system of accountability: The impact of instructional assessment on elementary children's achievement scores," by Samuel J. Meisels, Sally Atkins-Burnett, Yange Xue, Donna DiPrima Bickel, and Seung-Hee Son. (2003). *Educational Policy Analysis Archives, 11*(9), 19. Retrieved from http://epaa.asu.edu/eapp/v11n9/
- "The impact of classroom evaluation on students," by Terence J. Crooks. (1988). *Review of Educational Research, 58*(4), 438-481.
- "The role of classroom assessment in student performance on TIMSS," by Michael C. Rodriguez. (2004). *Applied Measurement in Education, 17*(1), 1-24.
- "The search for methods of group instruction as effective as one-to-one tutoring," by Benjamin Bloom. (1984). *Educational Leadership, 41*(8), 4-17.

Valuable professional development materials:

- *Assessment FOR Learning: An Action Guide for School Leaders,* by Steve Chappuis, Richard J. Stiggins, Judith Arter, and Jan Chappuis. Portland, OR: Assessment Training Institute, 2005.
- *Capturing All of the Reader Through the Reading Assessment System*, by Rachel Billmeyer. Omaha, NE: Dayspring Printing, 2004.
- *Creating Writers,* by Vicki Spandel. New York: Addison Wesley Longman, 2001.
- *How to Grade for Learning,* by Ken O'Connor. Thousand Oaks, CA: Corwin Press, 2002.
- *Scoring Rubrics in the Classroom*, by Judith Arter and Jay McTighe. Thousand Oaks, CA: Corwin Press, 2001.

REFERENCES

Black, P. & Wiliam, D. (1998). Assessment and classroom learning. *Educational assessment: Principles, policy and practice, 5*(1), 7-74. Also summarized in "Inside the black box: Raising standards through classroom assessment," *Phi Delta Kappan, 80*(2), 139-148.

Stiggins, R., Arter, J., Chappuis, J., & Chappuis, S. (2004). *Classroom assessment for student learning: Doing it right—using it well.* Portland, OR: Assessment Training Institute.

3rd Grade

The number sentence below can be solved using tens and ones.

67 + 25 = __?__ tens and __?__ ones.

Select one number from each column to make the number sentence true.

Tens	Ones
O 2	O 2
O 6	O 5
O 8	O 10
O 9	O 12

4th Grade

Which number is both a factor of 100 and a multiple of 5?

(A) 4
(B) 40
(C) 50
(D) 500

Which equation is true?

(A) $\frac{7}{100} + \frac{2}{10} = \frac{9}{100}$

(B) $\frac{7}{100} + \frac{2}{10} = \frac{9}{10}$

(C) $\frac{7}{100} + \frac{2}{10} = \frac{27}{100}$

(D) $\frac{7}{100} + \frac{2}{10} = \frac{72}{100}$

5^{th} Grade

Kevin uses $1\frac{1}{4}$ cups of milk to make 1 cake. What is the total amount of milk Kevin needs to make 6 of these cakes?

A. 6 cups

B. $6\frac{1}{4}$ cups

C. $7\frac{1}{2}$ cups

D. 9 cups

For 1a-1b, select the symbol (<, >, or =) that should be placed in the box $\square$ to make each statement true.

1a. $\left(372 \times \frac{5}{5}\right) \square \left(372 \times \frac{8}{5}\right)$ ○ < ○ > ○ =

1b. $\left(372 \times \frac{5}{5}\right) \square \left(372 \times \frac{1}{5}\right)$ ○ < ○ > ○ =

A carpenter used exactly 25 feet of wood to make 9 shelves of equal length. Each shelf measured between —

Ⓐ 1 and 2 feet.
Ⓑ 2 and 3 feet.
Ⓒ 3 and 4 feet.
Ⓓ 4 and 5 feet.

At Montgomery Elementary, $\frac{3}{5}$ of the students in the fifth grade are 10 years old. Among the 10 year-old students, $\frac{2}{3}$ are girls.

In the diagrams below:

-  represents a 10 year-old girl
-  represents a student who is not a 10 year-old girl

Which diagram represents the fraction of the fifth grade students who are 10 year-old girls at Montgomery Elementary?

(A) 

(B) 

(C) 

(D) 

6^{th} Grade

Hisaki is making sugar cookies for a school bake sale. He has $3\frac{1}{2}$ cups of sugar. The recipe calls for $\frac{3}{4}$ cup of sugar for one batch of cookies. Which equation can be used to find b, the total number of batches of sugar cookies Hisaki can make?

Ⓐ $3\frac{1}{2} \times \frac{3}{4} = b$

Ⓑ $3\frac{1}{2} \div \frac{3}{4} = b$

Ⓒ $3\frac{1}{2} + b = \frac{3}{4}$

Ⓓ $3\frac{1}{2} - b = \frac{3}{4}$

3rd Grade

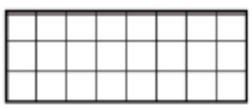
Amber has 24 inches of ribbon to attach to the sides of a rectangular box top. The ribbon must go around the perimeter of the rectangular box top with no overlap.

For numbers 1a–1c, select Yes or No to indicate whether Amber has exactly enough ribbon for each rectangular box top shown below.

Key
□ = 1 square inch

1a.  ◯ Yes ◯ No

1b.  ◯ Yes ◯ No

1c.  ◯ Yes ◯ No

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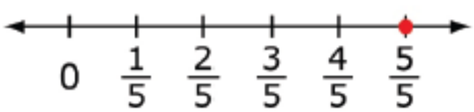
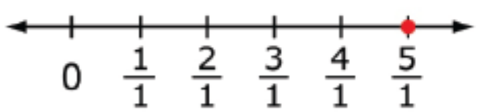
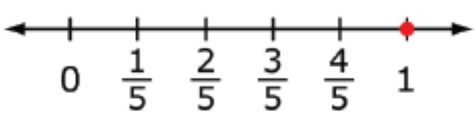
For numbers 1a to 1d, choose Yes or No to indicate whether each number graphed on the number line represents one whole.

1a. 

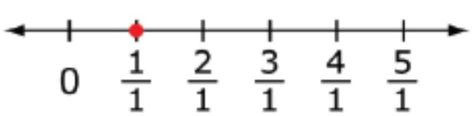
◯ Yes ◯ No

1b. 

◯ Yes ◯ No

1c. 

◯ Yes ◯ No

1d. 

◯ Yes ◯ No

Marcus has 36 marbles. He is putting an equal number of marbles into 4 bags.

For 1a–1d, choose Yes or No to indicate whether each number sentence could be used to find the number of marbles Marcus puts in each bag.

1a.	$36 \times 4 = \square$	◯ Yes	◯ No
1b.	$36 \div 4 = \square$	◯ Yes	◯ No
1c.	$4 \times \square = 36$	◯ Yes	◯ No
1d.	$4 \div \square = 36$	◯ Yes	◯ No

For each expression in 1a–1d, answer Yes or No if the expression is equivalent to the product of 7 and 9.

1a.	$7 \times (1 + 8)$	◯ Yes	◯ No
1b.	$9 \times (3 + 6)$	◯ Yes	◯ No
1c.	$(2 \times 5) + (5 \times 4)$	◯ Yes	◯ No
1d.	$(9 \times 2) + (9 \times 5)$	◯ Yes	◯ No

For items 1a–1c, choose Yes or No to show whether putting the number 7 in the box would make the equation true.

1a.	$10 \times \square = 70$	◯ Yes	◯ No
1b.	$48 \div \square = 6$	◯ Yes	◯ No
1c.	$63 \div \square = 9$	◯ Yes	◯ No

4th Grade

Kara wrote an expression that has a value of $\frac{12}{5}$.

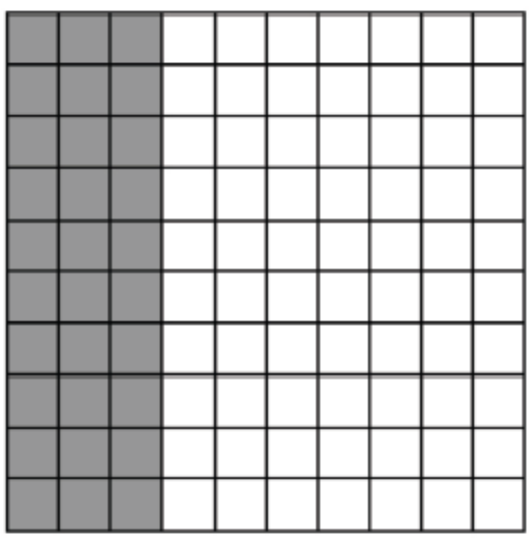
For numbers 1a – 1c, choose Yes or No to indicate whether each expression has a value of $\frac{12}{5}$.

1a. $12 \times \frac{1}{5}$ ○ Yes ○ No

1b. $12 \times \frac{5}{5}$ ○ Yes ○ No

1c. $3 \times \frac{4}{5}$ ○ Yes ○ No

Model Z is shaded to represent a value that is less than 1 whole.



Model Z

For numbers 1a–1c, choose Yes or No to indicate whether the value is equivalent to the value of the shaded part of Model Z.

1a. $\frac{30}{100}$ ○ Yes ○ No

1b. $\frac{3}{10}$ ○ Yes ○ No

1c. 0.03 ○ Yes ○ No

Sarah is 12 years old.

- George is *g* years old.
- Sarah is 3 times as old as George.

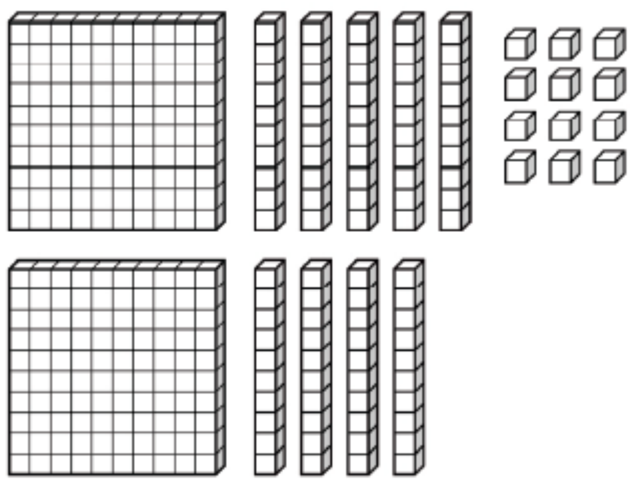
For numbers 1a–1c, choose Yes or No to indicate whether each statement is true.

1a. George's age, in years, can be represented by the expression $12 \div 3$. ○ Yes ○ No

1b. George is 15 years old. ○ Yes ○ No

1c. George's age, in years, can be found by solving the equation $12 = 3 \times g$. ○ Yes ○ No

This set of place-value blocks represents a number. The value of this number can be represented in many different ways.



Key

 = 1

For numbers 1a–1d, choose Yes or No to show whether the value is equivalent to the number represented by the place-value blocks.

1a. 200 + 90 + 12 ○ Yes ○ No

1b. Three hundred two ○ Yes ○ No

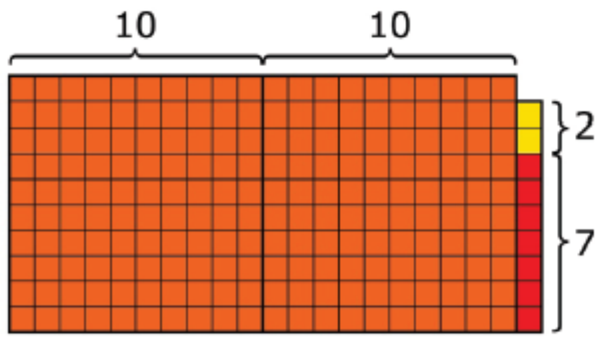
1c. 1 hundred + 20 tens + 2 ones ○ Yes ○ No

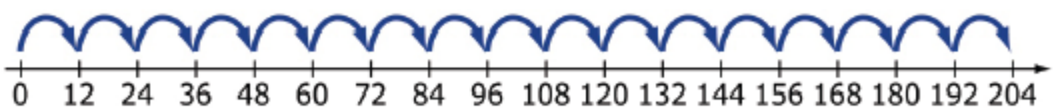
1d. 300 + 12 ○ Yes ○ No

A multiplication problem is shown below.

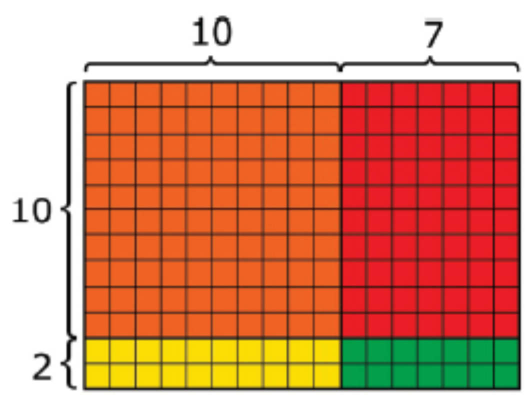
$$\begin{array}{r} 17 \\ \times 12 \\ \hline \end{array}$$

Which model(s) below could represent the solution to this problem? Click the letter next to all that apply.

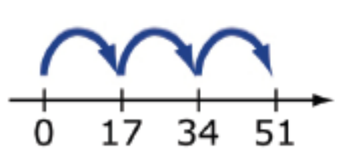
Ⓐ 

Ⓑ 

Ⓒ $(1 \times 1)+(1 \times 7)+(2 \times 1)+(2 \times 7)$

Ⓓ 

Ⓔ $(17 \times 2)+(17 \times 1)$

Ⓕ 

For numbers 1a–1c, choose Yes or No to indicate whether the measurement is equal to 3 feet, 6 inches.

1a. 1 yard, 6 inches	○ Yes	○ No
1b. 36 inches	○ Yes	○ No
1c. $3\frac{1}{2}$ feet	○ Yes	○ No

5th Grade

For numbers 1a-1c, select Yes or No to indicate whether each fraction can be placed in the box to make a true inequality.

$$\frac{3}{4} \times \square > \frac{3}{4}$$

1a. $\frac{12}{9}$	○ Yes	○ No
1b. $\frac{9}{9}$	○ Yes	○ No
1c. $\frac{9}{12}$	○ Yes	○ No

For numbers 1a-1d, select Yes or No to indicate whether or not the statement is true about the product of 450 and $\frac{1}{3}$.

1a. The product is less than $350 \times \frac{1}{3}$.	○ Yes	○ No
1b. The product is greater than $350 \times \frac{1}{3}$.	○ Yes	○ No
1c. The product is less than 450.	○ Yes	○ No
1d. The product is greater than 450.	○ Yes	○ No

In the morning John hiked $4\frac{8}{10}$ miles. In the afternoon he hiked $2\frac{1}{2}$ miles. How many miles did John hike altogether?

For numbers 1a – 1d, select Yes or No to indicate whether each equation can be used to solve the word problem shown above.

1a.	$4\frac{8}{10}+2\frac{5}{10}=\square$	Yes ○	No ○
1b.	$4\frac{8}{10}+2\frac{1}{10}=\square$	Yes ○	No ○
1c.	$\frac{40}{10}+\frac{20}{10}=\square$	Yes ○	No ○
1d.	$\frac{48}{10}+\frac{25}{10}=\square$	Yes ○	No ○

6^{th} Grade

An inequality is shown.

$$X > 4$$

Select the statement(s) and number line(s) that can be represented by the inequality. Click all that apply.

Ⓐ The temperature increased by 4° Fahrenheit.

Ⓑ The value of a number substituted for *x* is greater than 4.

Ⓒ Marcus drinks more than 4 glasses of water every day.

Ⓓ 

Ⓔ 

The level of the top of the water in the ocean is considered to be at an altitude of zero (0) feet.

- The ocean floor at a particular dive site is -20 feet.
- A diver is located at -5 feet at that same site.
- The captain of a boat is located at an altitude of 15 feet, directly above the diver.

For numbers 1a – 1d, select True or False for each statement.

1a. The distance from the captain to the diver is greater than the distance from the top of the water to the ocean floor.

○ True ○ False

1b. The distance from the captain to the top of the water is the same as the distance from the diver to the ocean floor.

○ True ○ False

1c. When the diver swims to -10 feet, the diver will be the same distance below the top of the water as the captain is above the top of the water.

○ True ○ False

1d. When the diver swims to -10 feet, the diver's distance to the ocean floor will be equal to diver's distance to the top of the water.

○ True ○ False

For numbers 1a–1c, select Yes or No to indicate whether the pairs are equivalent expressions.

1a. Are $4(3x - y)$ and $12x - 4y$ equivalent expressions?

◯ Yes ◯ No

1b. Are $32 + 16y$ and $8(4 + 2y)$ equivalent expressions?

◯ Yes ◯ No

1c. Are $3(x + 2y)$ and $3x + 2y$ equivalent expressions?

◯ Yes ◯ No

In art class, Marvin painted tiles to use for a project. For every 5 tiles he painted blue, he painted 8 tiles green.

Identify the equivalent ratio(s) of blue tiles to green tiles. Select all that apply.

- Ⓐ 20:23
- Ⓑ 40:25
- Ⓒ 50:800
- Ⓓ 60:96

Smarter Balance Assessment Consortium

PROBLEM TYPES and CLAIMS

Problem Types

SR – selected-response item

CR – constructed-response item

ER – extended-response item

TE – technology-enhanced item

PT – performance task

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."

- understand (often in conjunction with one or more other relevant verbs), solve, apply, describe, illustrate, interpret, and analyze.

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

- understand, explain, justify, prove, derive, assess, illustrate, and analyze

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."

- model, construct, compare, investigate, build, interpret, estimate, analyze, summarize, represent, solve, evaluate, extend, and apply

Lesson Planning Questions

Topic: What is the topic of the lesson?

Lesson Day: Where is this lesson in the overall plan of the unit?

<u>OVERVIEW</u>

Content Standard(s): What part of the standard(s) is being addressed today? This should be a brief statement or goal.

Practice Standard(s): What practice standard will I be focusing on today?

Type of Lesson:

- ☐ Concept Lesson
- ☐ Procedure or Skill Lesson
- ☐ Application or Problem Solving Lesson
- ☐ Review Lesson

Key Vocabulary: What vocabulary needs to be introduced or reviewed today? How and when will that take place?

Materials Needed: What materials are needed for this lesson? Materials include (but are not limited to): textbook resources, supplemental student activity pages or worksheets, manipulatives, rulers, protractors, strategies, models, technology,…

How and when will I support students in connecting to prior knowledge? What prior knowledge does this lesson build on and extend? It could be from the prior day or earlier in the year or the previous year.

How and when will I deal with homework?

LESSON

Opening prompt or problem: Leads in and connects to the topic of the day

Lesson Part 1, 2, 3,…: Description of what happens in each part of the lesson.

- ☐ What am I doing?
- ☐ What are students doing?
- ☐ What specific problems or activities are involved?
- ☐ What are some key questions that I want to ask?
- ☐ What materials are needed for this part?

Closure: What prompt can I use to help students review what they have learned? How will I know what they have learned?

Lesson Planning Template

Topic:

Lesson Day:

<u>OVERVIEW</u>
Content Standard(s):

Practice Standard(s):

Type of Lesson:

- ☐ Concept Lesson
- ☐ Procedure or Skill Lesson
- ☐ Application or Problem Solving Lesson
- ☐ Review Lesson

Key Vocabulary:

Materials Needed:

How and when will I support students in connecting to prior knowledge?

How and when will I deal with homework?

LESSON

Opening prompt or problem:

Lesson Part 1:

Lesson Part 2:

Lesson Part 3:

Closure:

Unit Planning Questions

Topic:

- What is the big idea that you will be addressing in this unit?

Content Standards:

- Which common core standards (or parts of standards) will be addressed in this unit?

Practice Standards:

- What standards for mathematical practice (1-2) do I want to focus on and promote during this unit?

What should students already know?

- What have students learned in previous grades?
- How does what they should already know connect to what they are going to learn?
- Where does this unit fall on the continuum of "Concrete – Representational – Abstract"

What will students learn and how will I know what they have learned?

- What should students understand by the end of the unit? What are some ideas for assessing student understanding?
- What should students know and be able to do by the end of the unit? What are some ideas for assessing procedural skills?
- How should students be able to demonstrate their ability to apply what they have learned by the end of the unit? What are some possible assessment ideas and/or tasks?
- Key Vocabulary

What tools, models, and materials are necessary to fully address the standards for this unit?

Anticipated Number of Days

- Approximately how many days do I anticipate needing for this unit (including all assessments)?
- How many days are needed for lessons related to:
  - Conceptual understanding
  - Procedures and skills
  - Applications and problem solving

Sketch of Unit by Days (Overview)

- Brief description of big ideas for each day

Unit Planning

Topic:

Content Standards:

Practice Standards:

What should students already know and how am I going to help them make connections to that prior knowledge?

What will students learn and how will I know what they have learned?

- Concrete – Representational – Abstract
- Conceptual Understanding:
- Procedures and Skills:
- Applications and Problem Solving:
- Key Vocabulary

What tools, models, and materials are necessary to fully address the standards for this unit?

Anticipated Number of Days: ______

- Conceptual understanding: ____ days
- Procedures and skills: ___ days
- Applications and problem solving: ___ days

Sketch of Unit by Days (Overview)