

**Individual  
Assessments,  
Students' Numerical  
Understanding,  
and  
the Common Core**

**Scholastic  
Math Leadership  
Summit**

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# Teachers are the **key...**

- Understand the math they have to teach
- Understand how children learn math
- Have effective instructional strategies
- Integrate assessment into instruction

# Strategies for Classroom Assessments

- Observe students
  - whole class discussions
  - small group work
- Examine student work
- Conduct one-on-one assessments

# ELA Common Core

As a natural outgrowth of meeting the charge to define college and career readiness, the Standards also lay out a vision of what it means to be a literate person in the twenty-first century. Indeed, the skills and understandings students are expected to demonstrate have wide applicability outside the classroom or workplace. Students who meet the Standards readily undertake the close, attentive reading that is at the heart of understanding and enjoying complex works of literature. They habitually perform the critical reading necessary to pick carefully through the staggering amount of information available today in print and digitally. They actively seek the wide, deep, and thoughtful engagement with high-quality literary and informational texts that builds knowledge, enlarges experience, and broadens worldviews. They reflexively demonstrate the cogent reasoning and use of evidence that is essential to both private deliberation and responsible citizenship in a democratic republic. In short, students who meet the Standards develop the skills in reading, writing, speaking, and listening that are the foundation for any creative and purposeful expression in language.

# ELA Common Core

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# From ELA to Math

. . . the Standards lay out a **vision of what it means to be a mathematically literate person in the twenty-first century**. . . .

Students undertake the **close, attentive mathematical reasoning** that is at the heart of understanding and enjoying **complex problems**. They habitually perform the **critical mathematical reasoning** necessary to pick carefully through the **staggering amount of information available today** in print and digitally. They actively seek the wide, deep, and **thoughtful engagement with high-quality mathematical information** that builds knowledge, enlarges experience, and broadens worldviews. They reflexively demonstrate the cogent reasoning . . . essential to both private deliberation and responsible citizenship . . . . In short, students who meet the Standards **develop the skills in mathematics, writing, speaking, and listening** that are the foundation for any **creative and purposeful mathematical expression**.

# Common Core State Standards

- Standards for  
Mathematical Practice
- Standards for  
Conceptual  
Understanding
- Standards for  
Procedural Skills

# Common Core

## Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

	Base Ten		Fractions
	Whole Numbers	Decimals	
<b>Conceptual Understanding</b>			
<b>Number Sense</b>			
<b>Procedural Skills</b>			

Problem Solving

Conceptual  
Understanding

Number  
Sense

Paper & Pencil  
Computation

# Middle School Math Reasoning Inventory (MSMRI)

## **Interviews to assess numerical understanding and skills**

Web-based formative/ diagnostic assessment to provide teachers information and insights into the numerical understanding and skills of their incoming middle school students

# Overview of MSMRI

- Assessment tool
- Formative/diagnostic
- Face-to-face interview
- Includes brief written survey
- Focuses on number
- Assesses standards for mathematical practice, understanding, and skills
- Web based
- Informs classroom instruction
- Identifies students who need intervention

Which is greater—  
 $3/5$  or  $1/2$ ?

How did you decide?

$$5/6 + 12/13$$

Don't figure out the exact answer. Without paper and pencil, decide which of these choices is closest to the answer.

$1/2$ , 1, 2, 8

Why do you think that?

$$1/2 + 2/3$$

Without using paper and pencil, decide if the answer to this is greater than 1 or less than 1.

Why do you think that?

Which is greater—  
 $3/5$  or  $1/2$ ?

How did you decide?

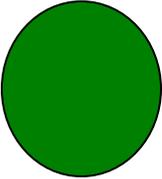
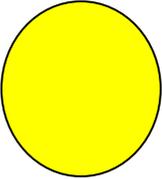
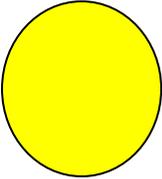
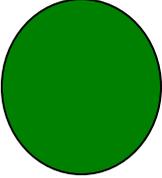
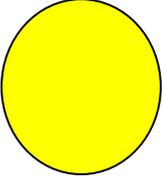
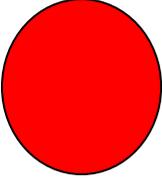
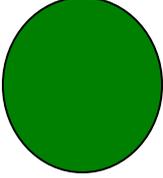
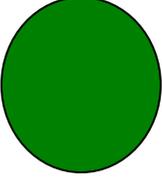
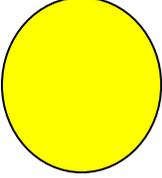
Which is greater—  
 $3/5$  or  $1/2$ ?

How did you decide?

- Correct
- Incorrect
- Self-corrected
- Did not answer

# How did you decide?

- Converted to common denominators
- Converted to decimals or percents
- Explained that half of 5 is  $2\frac{1}{2}$  or 2.5, so  $\frac{3}{5}$  is more than  $\frac{1}{2}$
- Explained that in  $\frac{3}{5}$ , two 3s are more than 5
- Gave faulty explanation
- Guessed or could not explain
- Other [record below]

	Base Ten		Fractions
	Whole Numbers	Decimals	
<b>Conceptual Understanding</b>			
<b>Number Sense</b>			
<b>Procedural Skills</b>			

# Call to Action

- Listen to learn from students
- Have students use p&p to keep track of their thinking
- Make reasoning essential for success



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