

Marilyn Burns

**2010
Annual Conference**

Summative Assessment

Too little . . .

Too late

Formative Assessment

Assessment *for*
learning . . .
rather than
assessment *of*
learning.

Formative Assessment

Definition from The Council of Chief State School Officers (CCSSO)

*Formative assessment is a process used by teachers and students **during instruction** that provides feedback to adjust ongoing teaching and learning to improve students' achievement of intended instructional outcomes.*

Diagnostic Assessment

- To determine prior knowledge and misconceptions **before instruction**
- To identify students who would benefit from intervention and determine their specific needs

Math Solutions Gates Grant

**Middle School Math
Reasoning Inventory
(MSMRI)**

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

MSMRI Content

- Addition/Subtraction
- Multiplication/Division
- Fractions/Decimals

Problem Solving

Conceptual
Understanding

Number
Sense

Paper & Pencil
Computation

	Add/ Sub/ PV	Mult/ Div	Frac/ Dec
Conceptual Understanding			
Number Sense			
Paper & Pencil Computation			
Problem Solving			

MSMRI

Why does it focus only on numerical understanding and skills?

Why face-to-face interviews?

Why web-based?

Fractions Interview Assessment Questions

Imagine sitting face to face with a student who is in sixth grade. You're interested in learning about his or her understanding and skills with fractions.

Think of 3–5 questions you might ask.

Fractions Assessment

- **Conceptual Understanding**

 - Meanings of fractions

 - Meanings of mixed numbers

 - Equivalence

 - Locating fractions on a number line

- **Number Sense**

 - Comparing

 - Ordering

 - Estimating

- **P & P Computation**

 - Addition/Subtraction/Multiplication/Division

 - Note for Division: only whole number divided by fraction and fraction divided by whole number

- **Problem Solving**

 - Determining fractional parts of sets

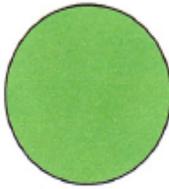
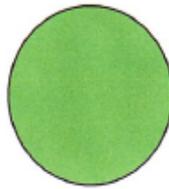
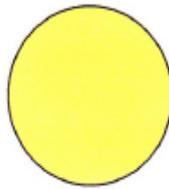
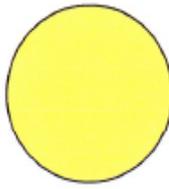
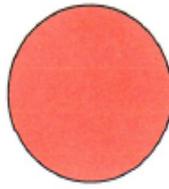
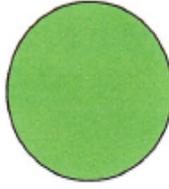
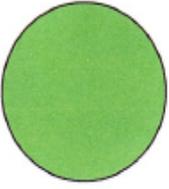
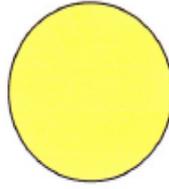
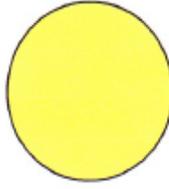
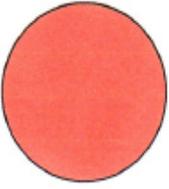
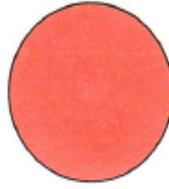
 - Solving problems in contexts

Standards for Mathematical Practice

Proficient students of all ages expect mathematics to make sense. They take an active stance in solving mathematical problems. When faced with a non-routine problem, they have the courage to plunge in and try something, and they have the procedural and conceptual tools to carry through. They are experimenters and inventors, and can adapt known strategies to new problems. They think strategically.

Gates Foundation Grants

- Development and testing of assessments and instructional tools in math and literacy
- Research and field testing to ensure the assessments and tools are effective, aligned with standards, and internationally benchmarked
- Work with partners to make them universally available to teachers, districts, and states

	Add/ Sub	Mult/ Div	Frac/ Dec
Conceptual Understanding			
Number Sense			
Paper & Pencil Computation			
Problem Solving			

Links to References

- Snapshots of Students' Misunderstandings, Marilyn Burns

http://www.mathsolutions.com/documents/0210_Ed_Leadership.pdf

- Looking at How Students Reason, Marilyn Burns

http://www.mathsolutions.com/documents/2005_How_Students_Reason.pdf

- Mental Math, Marilyn Burns

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- NCSM Position Paper <http://www.mathedleadership.org/docs/resources/positionpapers/NCSMPositionPaper5.pdf>

- Formative Assessment: A Process for Improving Teaching and Learning, NYSED

<http://scdn.wsbores.org/documents/FormativeAssessmentWhitePaperforNov13.pdf>



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