NCSM 2011 Conference

Learning from Students' Written Work: A Guide for Professional Development Grades K–6

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Middle School Math Reasoning Inventory (MSMRI)

Funded by the Bill & Melinda Gates Foundation

Middle School Math Reasoning Inventory (MSMRI)

Tool for assessing 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

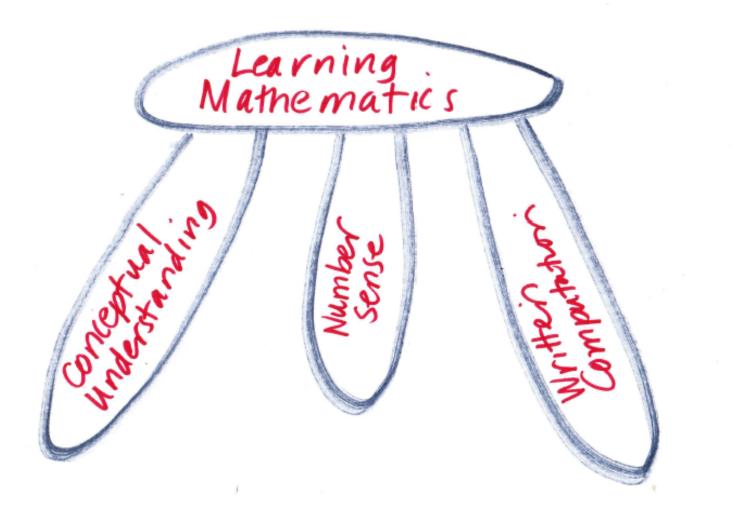
Overview of ASSESSMENT

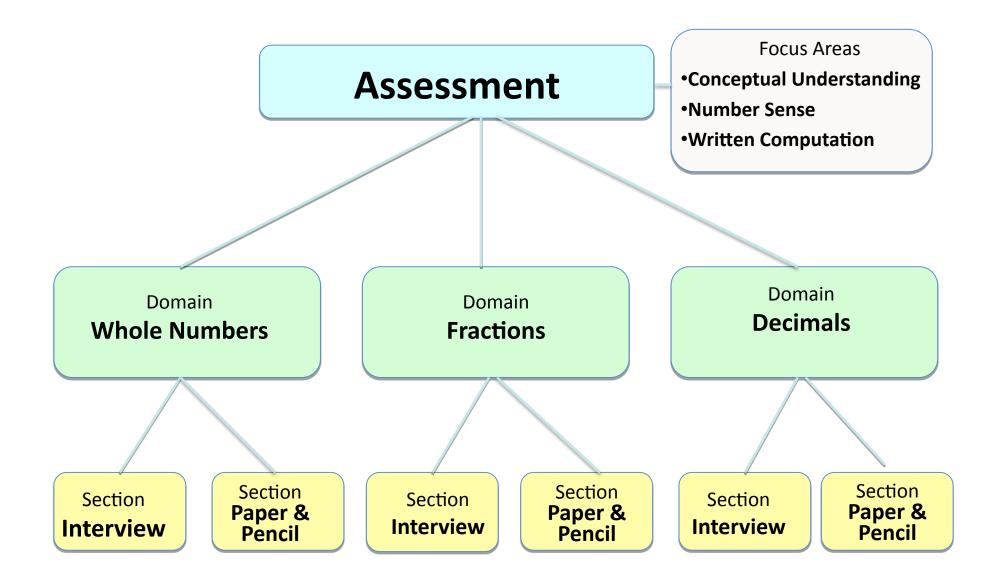
Focus Areas

- Conceptual Understanding
- Number Sense
- Written Computation

Number Sense

- understands relationships, properties, and procedures
- is able to explain and justify one's actions on numbers
- is able to use strategies appropriately and efficiently





Development Process

- **Development** by the author team
- <u>Tryouts</u> by "trusted teachers" (Math Solutions consultants)
- **<u>Piloting</u>** by "philosophically aligned teachers"
- Field Testing by unknown teachers who may or may not be philosophically aligned
- **Implementation** (widespread scaling up)

Session Overview

- Watch and discuss a sample interview
- Watch additional interviews
- Discuss other aspects of interviewing and watch additional video clips
 - Response Choices
 - Strategies and Notes
 - Appropriate situations for follow-up prompts

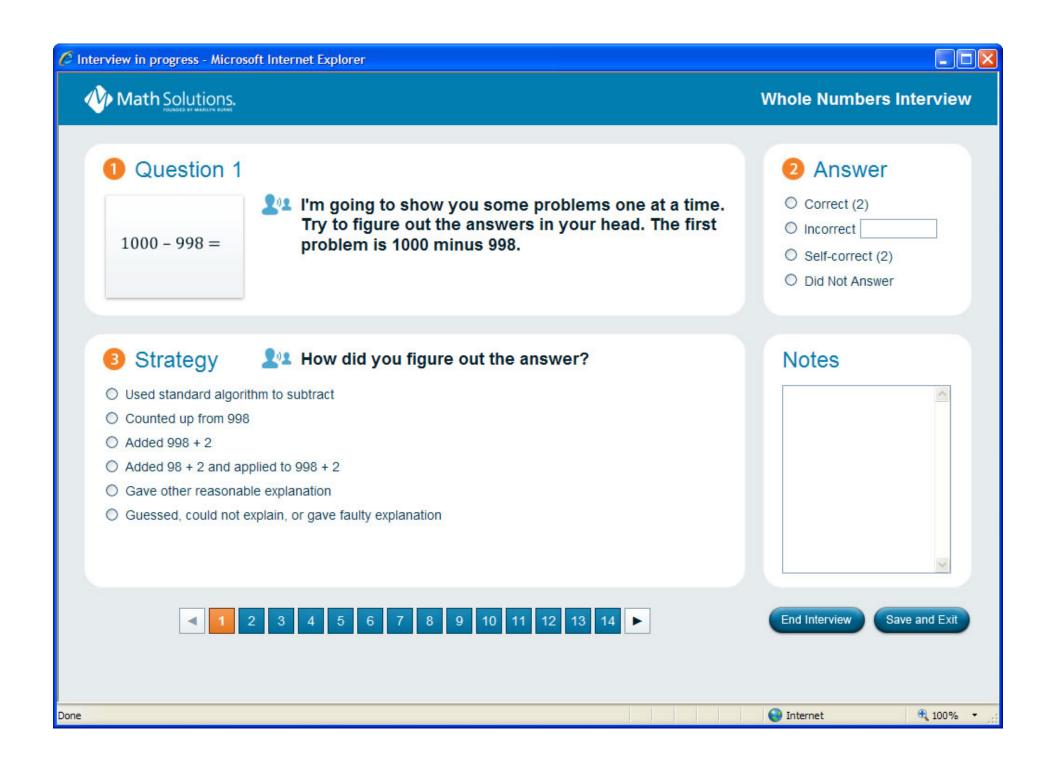
Amber

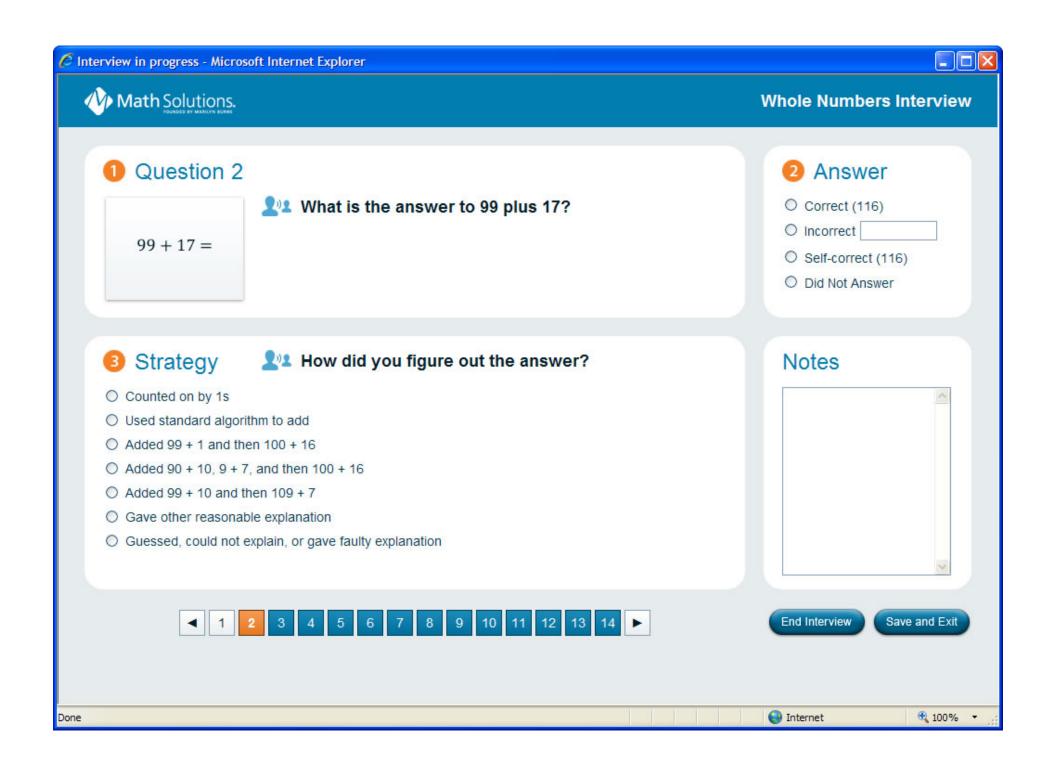
- 1000 3 1000 - 998 99 + 17 100 - 18
- 15 + ? = 200

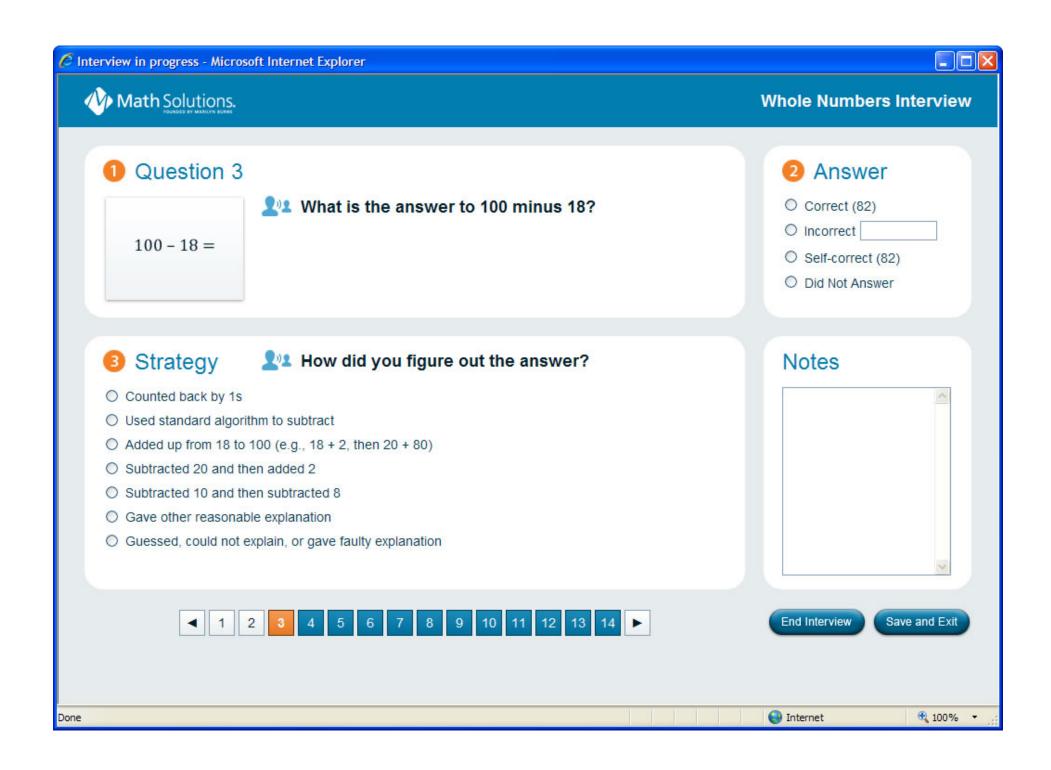
School Bus problem: There were 295 students. School buses hold 25 students. How many buses are needed?

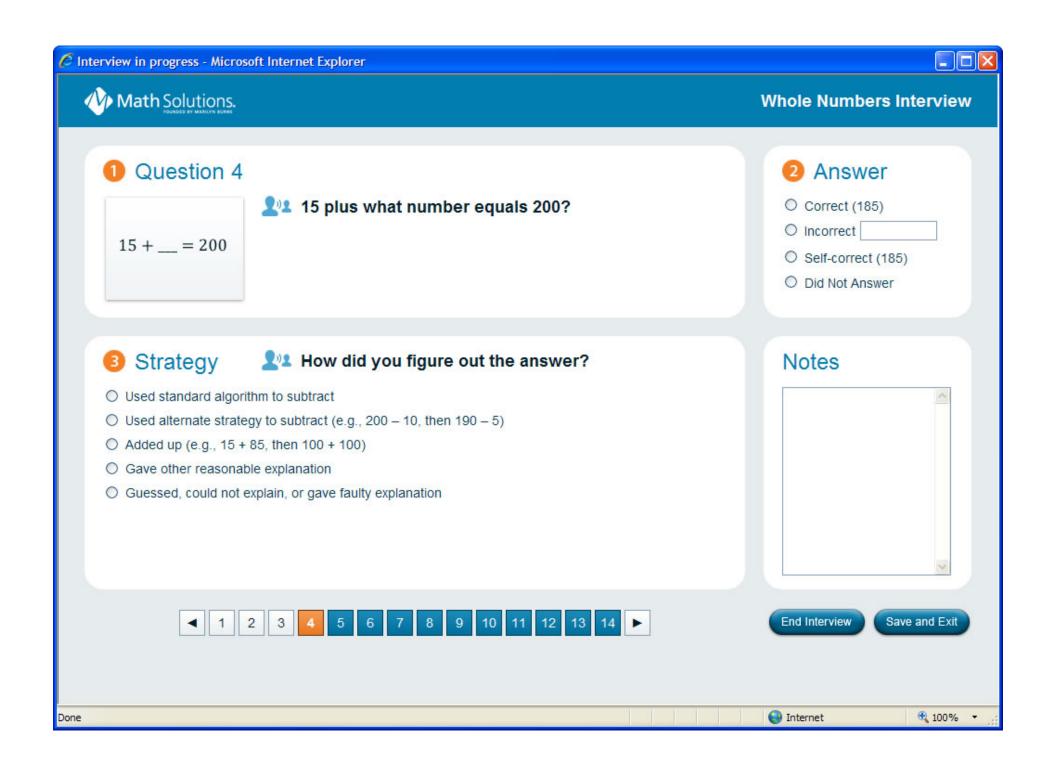
1000 – 3

This is not in the current assessment.

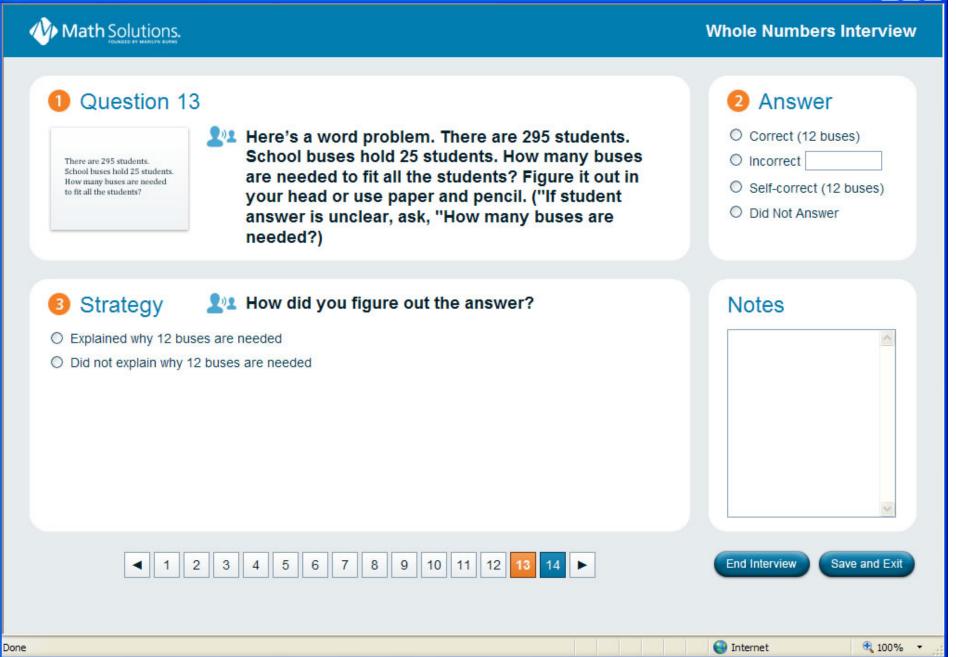












99 + 17 Response Choices

• Correct (116)

O Incorrect (_____)

O Self corrected (116)

O Did not answer

Which of these strategies did Alex use to reason?

- O Counted on by 1s
- O Used standard algorithm to add
- Added 99 + 1 and then 100 + 16
- Added 90 + 10, 9 + 7, and then 100 + 16
- Added 99 + 10 and then 109 + 7
- Gave other reasonable explanation
- Guessed, did not explain, or gave faulty explanation

100 - 18

100 – 18 Response Choices

• Correct (82)

O Incorrect (____)

O Self corrected (82)

O Did not answer

Alex: Strategy for 100 – 18

• Counted back by 1s • Used standard algorithm to subtract • Added up (e.g., 18 + 2, then 20 + 18) • Subtracted 20 and then added 2 Subtracted 10 and then subtracted 8 • Gave other reasonable explanation • Guessed, did not explain, or gave faulty explanation

More about Response Choices, Strategies, and Notes

Sometimes more than one strategy choice seems to apply

An example with Amber

1/2 + 2/3 Is the answer greater or less than 1?

Strategy Choices—1/2 + 2/3 How did you decide?

- O Converted to common denominators
- Explained that 2/3 is greater than 1/2 so answer must be greater than 1
- Converted to decimals or percents
- O Described a visual or physical model
- Gave other reasonable explanation
- O Guessed, did not explain, or gave faulty explanation

Chase

7/8 + 11/13

Which of these is the best estimate? $\frac{1}{2}$ 1 2 8

Strategy Choices—7/8 + 11/13 How did you decide?

- Rounded one or both fractions to 1, then added
- Analyzed choices and chose one that seemed most reasonable
- Gave other reasonable explanation
- Guessed, did not explain, or gave faulty explanation

DJ

3.9 x 4.75

Which of these is the best estimate? 5, 10, 20, or 30

Strategy Choices—3.9 x 4.75 How did you decide?

- □ Used standard algorithm to multiply
- Rounded and then multiplied
- Gave other reasonable explanation
- Guessed, did not explain, or gave faulty explanation

Common Core Math Trajectories

http://www.ccii-cpre.org/



www.mathsolutions.com 800.868.9092 info@mathsolutions.com

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