

Adapting Problems to Meet the Rigor of the CCSS

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Why is problem solving important?

How do students develop the capacity to problem solve?

Rationale

National Council of Teachers of Mathematics (2000) recommends that students:

- Communicate their thinking to peers, teachers, and others
- Analyze and evaluate their math thinking and strategies
- Use the language of mathematics

Writing in math class supports learning because it requires students to organize, clarify, and reflect on their ideas—all useful processes for making sense of mathematics. In addition, when students write, their papers provide a window into their understandings, their misconceptions, and their feelings about the content they're learning.

Marilyn Burns, "Writing in Math," *Education Leadership*, 62(2) (October 2004), p. 30.

What is problem solving?

Common Core Connection

Standards for Mathematical Practice and Problem Solving Solve Problems

- Reason abstractly and quantitatively
- Construct viable arguments
- Model with Mathematics
- Use tools strategically
- Attend to precision

J. Christinson, *Balancing Mathematics Instruction* (2013), p. 30

What is a good problem-solving task?

What is a story problem?

Problem Solving Task Activity

Mario has a wall in his room that measures 13 ft long and $8\frac{1}{2}$ ft high and is freshly painted. He wants to hang his favorite posters on the wall. Each poster measures 3 ft by 2 ft. What is the greatest number of posters that he can hang on the wall so that the posters do not overlap?

Poster Method for Processing

- Individual Data Sheet
- Group Data Sheet
- Visit
- Written Explanation
- Circle Discussion
- Teacher description of the solution

Written Explanation Components

1. How did your group solve the problem?
2. How does your group know your solution is correct mathematically?

Selecting the Problem-Solving Task

- Does it relate to current unit focus?
- Is it accessible to all students?
- Does it challenge mathematical understanding?
- Does it involve ideas from more than one mathematical strand?
- Do I understand the math in the problem?

How are you currently assessing student problem solving in your math program?
