

**Effective Teaching Strategies
for Your Common Core
Curriculum in Action**

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Write a word problem for:

$3(-7) - 10 + 25 = -6$

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Goals for this session

- Make sense of Standards for Mathematical Practice as they apply to middle school curriculum and instruction.
- Unpack norms supportive of student engagement in Standards for Mathematical Practice.
- Create a shared image of Common Core middle school classrooms.

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With which practice were these students engaged?

The 8 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

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What does engagement in SMP 1 look like?

The 8 Standards for Mathematical Practice:

- 1 Make sense of problems and persevere in solving them

How can we make sense of supportive teacher moves?

(and why is this important?)

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Norms for Supporting SMP1

“Research by Stein and colleagues (Henningsen and Stein 1997; Stein and Lane 1996; Stein, Grover, and Henningsen 1996) makes the case resoundingly that cognitively challenging tasks that promote thinking, reasoning, and problem solving often decline during implementation as a result of various classroom factors” p. 11

Smith, M. S., Gill, V., & Hughes, E. K. (2012). Thinking through a lesson: Successfully implementing high-level tasks. In G. Lappan, M. K. Smith, & E. Jones (Eds.), Rich & Engaging Mathematical Tasks Grades 5-9. Reston, VA: National Council of Teachers of Mathematics, 11-17.

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Model with Mathematics

Seeing Structures in Expressions A-SSE Interpret the structure of expressions

1. Interpret parts of an expression, such as terms, factors, and coefficients.

Write expressions in equivalent forms to solve problems

3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.

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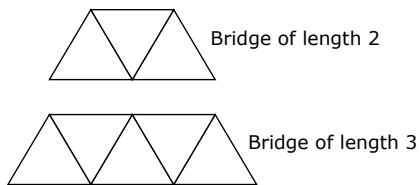
Model with Mathematics

Expressions and Equations 7.EE Use properties of operations to generate equivalent expressions.

1. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
2. Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.
For example, $a + 0.05a = 1.05a$ means that "increase by 5%" is the same as "multiply by 1.05."

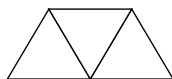
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Consider Algebra & Bridges

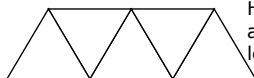


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Consider Algebra & Bridges

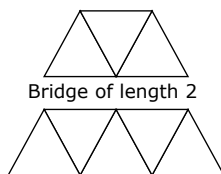


How many beams are in a bridge of length 2?



How many beams are in a bridge of length 3?

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Bridge of length 2

Bridge of length 3

Length	Number of Beams
2	
3	
5	
10	
50	
n	

11

With which practice were we engaged?

The 8 Standards for Mathematical Practice:

- 1 Make sense of problems and persevere in solving them
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We need norms in place for students to engage in the Practices. Try these...

- Provide explanations and justifications with all answers.
- Make sense of each other's solutions.
- Say when you don't understand or don't agree.

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Use errors as springboards to learning

When students are taught through the Standards for Mathematical Practice of the Common Core there is a fundamental shift in what students know and can do – even their errors are affected. We must be prepared.

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