High Leverage Assessment - 8 (Expressions & Equations)

Teacher Note

Please consider:
- Administering the entire grade level HLA three times a year (sometime during the months of September, January, and May).

- Only assign tasks that can be completed in one sitting (i.e., assign half the tasks on one day and the remaining tasks on another day).

- Remind students to show their thinking using models, numbers and/or words.

- Some students may not be ready to solve specific tasks. Please allow them to move on to the next question.

- Over time, you should see progress in the complexity of the strategies and/or models that all students use to demonstrate their mathematical thinking.

Purpose - To Share with Students

"This assessment provides evidence of your growth throughout the school year.

In order to see growth, we have to know how you are thinking about these problems each time you see them. That means that we need to see your thinking in words, models, or numbers.

The strategies that you use to make sense of these problems is what demonstrates growth and is therefore most important to us.

You may use the tools that are always available to you in our classroom, but not a calculator or computer.

I may tell you to move on to another problem if I see sufficient evidence of your strategy. I may also ask a question to better help me understand your strategy. You may or may not have time to finish."
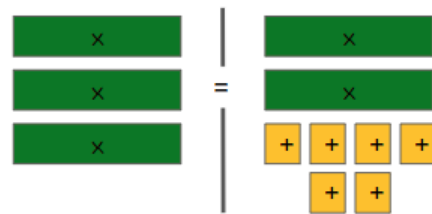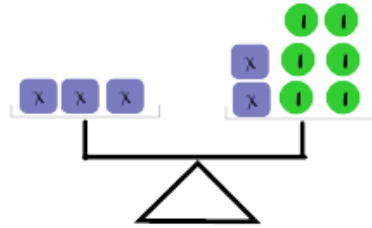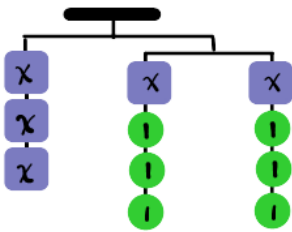
High Leverage Assessment

Name:_____   Teacher:_____   Date:_____

1. These are three visual representations of equivalent equations.
   a. What is the equation you see?
   b. Use one of the visuals to show how to solve for x.

High Leverage Assessment

Name:_____   Teacher:_____   Date:_____

2. Here are two different first steps that students took when solving the equation
-2(3x + 5) = 20x - 4 Describe what each student did and explain if it was a reasonable 1st step and keeps the equation balanced.

<table>
<tr><td align="center">Shakira</td><td align="center">Mohammed</td></tr>
<tr><td align="center">-2(3x + 5) = 20x - 4</td><td align="center">-2(3x + 5) = 20x - 4</td></tr>
<tr><td align="center">-6x - 10 = 20x - 4</td><td align="center">3x + 5 = -10x + 2</td></tr>
</table>

High Leverage Assessment

Name:_____   Teacher:_____   Date:_____

3. Jo made a mistake while solving this equation. Find the mistake and explain why it is wrong.

$$3(x+2) = 4x - 6$$
$$3x = 4x - 8$$
$$0 = x - 8$$
$$8 = x$$

High Leverage Assessment

Name:_____   Teacher:_____   Date:_____

4. Here's Dylan's work to solve the following equation:

$$3x + 4 = 5$$
$$ -4 \quad -4$$
$$3x = 1$$

Dylan says that this equation has no solution because you can't multiply 3 by anything to get 1. Do you agree or disagree?