

**Non-Secure Item\*\*\*Non-Secure Item\*\*\*Non-Secure Item\*\*\*Non-Secure Item**

1. A student claims that  $8x - 2(4 + 3x)$  is equivalent to  $3x$ . The student's steps are shown.

Expression:  $8x - 2(4 +$

$3x)$  Step 1:  $8x - 8$

$+ 3x$  Step 2:  $8x +$

$3x - 8$  Step 3:  $11x$

$- 8$

Step 4:  $3x$

**Part A**

Describe ALL errors in the student's work.

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**Part B**

If the errors in the student's work are corrected, what will be the final expression?

**Show All Work**

Expression \_\_\_\_\_

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<b>Process Standards:</b> 1, 3, 7 Item Type: Constructed-Response Points: 2-Content, 2-Process DOK: 3 <b>Calculator: Yes</b>	<b>Content Standard:</b> 7.AF.1: Apply the properties of operations (e.g., identity, inverse, commutative, associative, distributive properties) to create equivalent linear expressions, including situations that involve factoring (e.g., given $2x - 10$ , create an equivalent expression $2(x - 5)$ ). Justify each step in the process.
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**Exemplary Response:**

In Step 1, the student did not apply the distributive property correctly. The student forgot to multiply  $-2$  and  $3x$ . In Step 4, the student should not have subtracted 8 from  $11x$  because they are not like terms. OR other valid descriptions of the errors

**AND**

$$2x - 8$$

**Sample Process:**

$$8x - 2(4 + 3x)$$

$$8x - 8 - 6x$$

$$2x - 8$$

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2. Sara follows these two steps to prepare a roast:

1. Preheat the oven for 10 minutes.
2. Place roast in oven and cook for 20 minutes per pound.

Last week, it took a total of 90 minutes for Sara to prepare a roast.

**Part A**

Write an equation that can be used to determine the weight, in pounds, of the roast Sara prepared. Be sure to define the variable in your equation.

Define the variable \_\_\_\_\_

Equation \_\_\_\_\_

**Part B**

What was the weight, in pounds, of the roast Sara prepared?

**Show All Work**

Answer \_\_\_\_\_pounds

**Part C**

Sara served potatoes with her roast. She bought  $\frac{1}{3}$  pound of potatoes for each pound of roast. Potatoes cost \$0.87 per pound. The roast cost \$5.99 per pound.

How much did Sara spend on the potatoes and roast? Do NOT include tax.

**Show All Work**

Answer \$ \_\_\_\_\_

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<b>Process Standards:</b> 1, 2, 4, 6 Item Type: Extended-Response Points: 3-Content, 3-Process DOK: 3 <b>Calculator: Yes</b>	<b>Content Standard:</b> 7.AF.2 Solve equations of the form $px + q = r$ and $p(x + q) = r$ fluently, where $p$ , $q$ , and $r$ are specific rational numbers. Represent real-world problems using equations of these forms and solve such problems.
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**Exemplary Response:**

Let  $w$  represent the weight of the roast in pounds.  $10 + 20w = 90$

Or other valid equation and definition of the variable

**AND**

4 pounds

**AND**

\$25.12

**Sample process:**

$$10 + 20w = 90$$

$$20w = 80$$

$$w = 4$$

$4 \times \frac{1}{3} = \frac{4}{3}$  pounds of potatoes  
 $\frac{4}{3} \times \$0.87 = \$1.16$

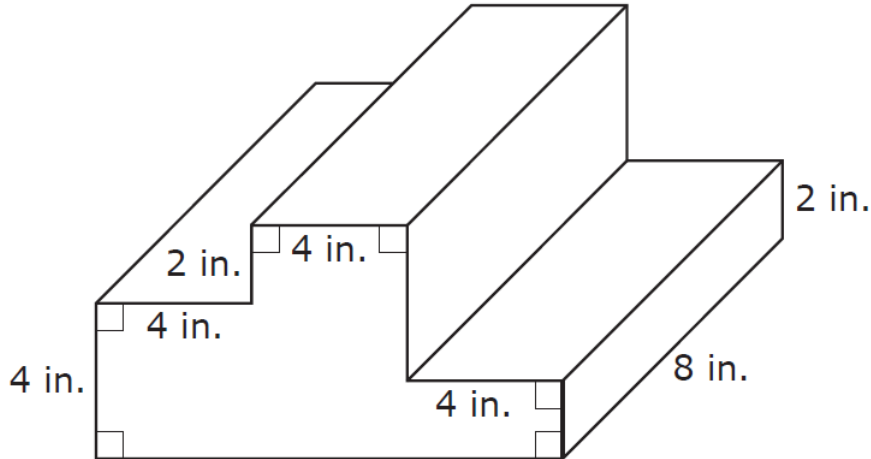
$$4 \times \$5.99 = \$23.96$$

$$\$1.16 + \$23.96 = \$25.12$$

Or other valid process

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3. Malcolm wants to make a stage out of wax to display his model cars. A diagram of the stage is shown.



**Part A**

What is the volume, in cubic inches, of the stage?

**Show All Work**

**Answer** \_\_\_\_\_ cubic inches

**Part B**

Malcolm knows 1 pound of wax will fill 30 cubic inches of the stage. A 5-pound bag of wax costs \$8. What is the cost of the wax Malcolm needs to buy to make the stage, if Malcolm buys only 5-pound bags? Do NOT include tax.

**Show All Work**

**Answer** \$ \_\_\_\_\_

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<b>Process Standards:</b> 1, 2, 4, 6, 7 Item Type: Extended-Response Points: 3-Content, 3-Process DOK: 3 <b>Calculator: Yes</b>	<b>Content Standard:</b> 7.GM.6: Solve real-world and other mathematical problems involving volume of cylinders and three-dimensional objects composed of right rectangular prisms.
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**Exemplary Response:**

384 cubic inches

**AND**

\$24

**Sample process:**

$$\text{Volume} = 4 \times 4 \times 8 + 4 \times 6 \times 8 + 4 \times 2 \times 8$$

$$V = 128 + 192 + 64$$

$$V = 384$$

$$384/30 = 12.8$$

pounds 3 bags  
needed

$$3 \times \$8 = \$24$$

Or other valid process

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4. Barbara is learning to speak a foreign language. She already knows 16 words in the foreign language. Her goal is to know a total of 100 words. Over the summer, she will learn 4 new words each day.

**Part A**

Write an equation that can be used to determine the number of days it will take Barbara to reach her goal of 100 words. Be sure to define the variable in your equation.

**Define the variable** \_\_\_\_\_

**Equation** \_\_\_\_\_

**Part B**

How many days will it take Barbara to reach her goal?

**Show All Work**

**Answer** \_\_\_\_\_ days

If Barbara wants to reach her goal 7 days sooner, how many words must she learn each day?

**Show All Work**

**Answer** \_\_\_\_\_ words

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**Exemplary Response:**

Let  $d$  represent the number of days it takes Barbara to reach her goal  $16 + 4d = 100$

Or other valid equation and definition of the variable

**AND**

21 days

**AND**

6 words

**Sample process:**

$$16 + 4d = 100$$
$$4d = 84$$
$$d = 21$$

$$21 - 7 = 14 \text{ days}$$

$$84/14 = 6$$

Or other valid process