

Item Number	Answer Key	Evidence Statement Key
1.	C, D	7.NS.1c-1
2.	The temperature decreased by 6.75 degrees Fahrenheit from the beginning to the end of the 3-hour period.	7.NS.3
3.	The number 30 represents the number of grams of protein for every 6 tablespoons of peanut butter.	7.RP.2d
4.	A	7.EE.1
5.	C	7.NS.2b-2
6.	B, C, E	7.EE.2
7.	B	7.RP.2b
8.	1.3	7.NS.3
9.	B	7.NS.1b-2
10.	A	7.EE.4a-1
11.	$\frac{3}{2}$	7.RP.2b
12.	B, D	7.NS.2c
13.	$30x - 12,000 \geq 980$ The factory must sell a minimum of 433 backpacks to meet the weekly goal.	7.EE.4b
14.	$y = \frac{2}{5}x$ or equivalent equation	7.RP.2c
15.	2, x, 4x	7.EE.1
16.	D	7.SP.3

17.	See Rubric	7.D.1
18.	Part A: 16.56 Part B: 3.564	7.EE.3
19.	Part A: C Part B: B Part C: D The water travels <input type="text" value="450"/> feet and completes <input type="text" value="15"/> Part D: cycles in 3 minutes.	7.RP.3-1
20.	See Rubric	7.C.6-1
21.	1.5	7.RP.1
22.	Part A: $1\frac{3}{4}x$ or equivalent Part B: See Rubric	7.C.8
23.	$2x + x = 90$ or equivalent equation $30^\circ$ or equivalent numbers	7.G.5
24.	$\frac{8}{9}$	7.RP.1
25.	A	7.SP.4
26.	There <input type="text" value="are more than 2 triangles"/> with angle measures of $30^\circ$ , $70^\circ$ , and $80^\circ$ . There <input type="text" value="is exactly 1 triangle"/> with two sides each 6 inches long and one angle measure of $90^\circ$ .	7.G.2
27.	Part A: $7\frac{1}{2}$ inches long $4\frac{1}{2}$ inches long $4\frac{1}{2}$ inches wide      or $7\frac{1}{2}$ inches wide Equivalent numbers accepted for each blank Part B: See Rubric Part C: See Rubric	7.D.2
28.	B, D	7.RP.2a

### #17 Rubric

Score	Description
3	<p>Student response includes the following 3 elements.</p> <ul style="list-style-type: none"><li>• <b>Computation component</b> = 1 point<ul style="list-style-type: none"><li>○ The student provides the correct total mass, in grams, of the chemical in the container, 149.5 grams or equivalent.</li></ul></li><li>• <b>Modeling component</b> = 2 points<ul style="list-style-type: none"><li>○ The student provides a valid process for determining that 44.85 grams is equivalent to <math>\frac{3}{10}</math> of the total mass that was in the container.</li><li>○ The student provides valid work or explanation to determine the total mass in the container.</li></ul></li></ul> <p>Sample Student Response:</p> <p>In order to determine the total mass of the chemical you could first find</p> $39.1 + 5\frac{3}{4} = 39.1 + 5.75 = 44.85 \text{ grams, which is } \frac{3}{10} \text{ of the total mass of the}$ <p>chemical. Next, you could divide 44.85 by <math>\frac{3}{10}</math>, which is the same as <math>44.85 \div 0.3</math>, or 149.5 grams. The total mass of the chemical before the sample was removed was 149.5 grams.</p> <p><b>Notes:</b></p> <ul style="list-style-type: none"><li>• Other valid solutions or explanations are acceptable.</li><li>• The student may receive a combined total of 2 points if the modeling processes are correct but the student makes one or more computational errors resulting in incorrect answers.</li><li>• The student may receive a total of 1 point if they compute the correct answer but show no work or insufficient work to indicate a correct modeling process.</li></ul>
2	Student response includes 2 of the 3 elements.
1	Student response includes 1 of the 3 elements.
0	Student response is incorrect or irrelevant.

### #20 Rubric

Score	Description
3	<p>Student response includes the following 3 elements.</p> <ul style="list-style-type: none"><li>• <b>Reasoning component</b> = 3 points</li></ul>

	<ul style="list-style-type: none"> <li>○ The student provides a correct explanation that a table that contains (1,1) does not necessarily represent a proportional relationship.</li> <li>○ The student provides a correct explanation that a table that contains only positive values does not necessarily represent a proportional relationship.</li> <li>○ The student provides a correct explanation that a straight line does not necessarily form a proportional relationship.</li> </ul> <p>Sample Student Response:</p> <p>In order for a table of values to represent a proportional relationship where one entry in the table is (1,1), all other entries in the table would have to be in the ratio 1:1. The values 2 and 3 are not in a 1:1 ratio.</p> <p>A table of values that has only positive values does not necessarily represent a proportional relationship. There are many tables of only positive values that are not in a proportional relationship. For example, the points (1,2) and (2,2) have positive values but because they do not form a line that passes through the point (0,0), the points do not form a proportional relationship.</p> <p>Just because the graph that contains these points is a line does not mean the points form a proportional relationship. The line that is formed would also need to contain (0,0) and this line contains (0,-1).</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• Other valid explanations are acceptable.</li> <li>• For each part, if the student’s response only indicates whether or not the reason indicates a proportional relationship without justifying why, then the student receives no credit for that part.</li> </ul>
<b>2</b>	Student response includes 2 of the 3 elements.
<b>1</b>	Student response includes 1 of the 3 elements.
<b>0</b>	Student response is incorrect or irrelevant.

<b>#22 Rubric Part A</b> (This part is machine scored)	
<b>Score</b>	<b>Description</b>
<b>1</b>	Student response includes the following element. <ul style="list-style-type: none"> <li>• <b>Computation component</b> = 1 point</li> </ul>

	<ul style="list-style-type: none"> <li>• Student provides the correct expression of <math>1\frac{3}{4}x</math> or equivalent.</li> </ul>
<b>0</b>	Student response is incorrect or irrelevant.
<b>#22 Rubric Part B</b>	
<b>Score</b>	<b>Description</b>
<b>3</b>	<p>Student response includes the following 3 elements.</p> <ul style="list-style-type: none"> <li>• <b>Reasoning component</b> = 2 points <ul style="list-style-type: none"> <li>○ The student provides a correct process for finding the sum of the perimeters of all four smaller rectangles and the perimeter of the larger rectangle.</li> <li>○ The student provides valid reasoning that indicates a correct comparison between the sum of perimeters of the smaller rectangles and the larger rectangle.</li> </ul> </li> <li>• <b>Computation component</b> = 1 point <ul style="list-style-type: none"> <li>○ The student provides correct computations, as work or explanation, which is consistent with the reasoning.</li> </ul> </li> </ul> <p>Sample Student Response:</p> <p>The perimeter of each smaller rectangle is <math>1\frac{3}{4}x</math>. So the perimeter of all four smaller rectangles is <math>4\left(1\frac{3}{4}x\right) = \frac{4}{1} \times \frac{7}{4}x = 7x</math>. The perimeter of the larger rectangle is <math>2\left(x + \frac{3}{4}x\right) = 2\left(1\frac{3}{4}x\right) = \frac{2}{1} \times \frac{7}{4} = \frac{7}{2}x</math>. Since <math>7x</math> is twice <math>\frac{7}{2}x</math>, the sum of the perimeters of all four smaller rectangles is equal to twice the perimeter of the larger rectangle and Rico's conclusion is correct.</p> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>• The student may receive a combined total of 2 points if the reasoning processes are correct but the student makes one or more computational errors resulting in incorrect answers or an incorrect conclusion.</li> <li>• The student may receive a total of 2 points if they compute the correct answer but shows no work or insufficient work to indicate correct reasoning processes.</li> <li>• The response may be more conceptual than computational. For example, the student may reason that the sum of the perimeters of the smaller rectangles is twice the perimeter of the larger by comparing the relative side lengths.</li> <li>• The student cannot receive more than 1 point for reasoning if the explanations, while sufficient to indicate that the student had correct reasoning, contain nonsense statements.</li> </ul>

<b>2</b>	Student response includes 2 of the 3 elements.
<b>1</b>	Student response includes 1 of the 3 elements.
<b>0</b>	Student response is incorrect or irrelevant.

**#27 Rubric Part A**  
(This part is machine scored)

<b>Score</b>	<b>Description</b>
<b>1</b>	Student response includes the following element. <ul style="list-style-type: none"> <li>• <b>Computation component</b> = 1 point <ul style="list-style-type: none"> <li>○ Student provides values of <math>7\frac{1}{2}</math> and <math>4\frac{1}{2}</math> or equivalents.</li> </ul> </li> </ul>
<b>0</b>	Student response is incorrect or irrelevant.

**#27 Rubric Part B**

<b>Score</b>	<b>Description</b>
<b>2</b>	Student response includes the following 2 elements. <ul style="list-style-type: none"> <li>• <b>Computation component</b> = 1 point <ul style="list-style-type: none"> <li>○ The student provides the correct number of layers of cubes that can fit inside the prism, 6 layers.</li> </ul> </li> <li>• <b>Modeling component</b> = 1 point <ul style="list-style-type: none"> <li>○ The student provides valid work or explanation to convert measurements to find the number of layers of cubes that can fit inside the prism.</li> </ul> </li> </ul> <p>Sample Student Response:</p> <p>The height inside the box is <math>\frac{3}{4}</math> feet, which is the same as <math>\frac{3}{4} \times 12 = 9</math> inches.</p> <p>Each cube has an edge length of <math>1\frac{1}{2}</math> inches, so <math>9 \div 1\frac{1}{2} = 6</math> layers of cubes fit in the box.</p>
<b>1</b>	Student response includes 1 of the 2 elements.
<b>0</b>	Student response is incorrect or irrelevant.

**#27 Rubric Part C**

<b>Score</b>	<b>Description</b>
<b>3</b>	Student response includes the following 3 elements. <ul style="list-style-type: none"> <li>• <b>Computation component</b> = 1 point <ul style="list-style-type: none"> <li>○ The student provides the correct weight, in ounces, of one letter cube, <math>\frac{2}{3}</math> ounce.</li> </ul> </li> <li>• <b>Modeling component</b> = 2 points <ul style="list-style-type: none"> <li>○ The student provides valid work or explanation to apply the volume</li> </ul> </li> </ul>

- formula to find the total number of letter cubes that fill the box.
- The student provides valid work or explanation to determine the weight, in ounces, of one letter cube.

Sample Student Response:

Since there are  $3 \times 5 = 15$  cubes in the bottom layer of the box, and there are 6 layers of cubes in the box, there are a total of  $15 \times 6 = 90$  letter cubes in the box.

The full box weighs 4 pounds, so the cubes alone weigh  $4 - \frac{1}{4} = 3\frac{3}{4}$  pounds or  $3\frac{3}{4} \times 16 = 60$  ounces. Each cube weighs  $60 \div 90 = \frac{2}{3}$  ounce.

**Notes:**

- The student may receive a combined total of 3 points for the modeling components if the modeling processes are correct, but the student makes one or more computational errors resulting in incorrect answers.
- The student cannot receive more than 2 total points for modeling if the explanations, while sufficient to indicate that the student had correct reasoning, contain nonsense statements.

<b>2</b>	Student response includes 2 of the 3 elements.
<b>1</b>	Student response includes 1 of the 3 elements.
<b>0</b>	Student response is incorrect or irrelevant.