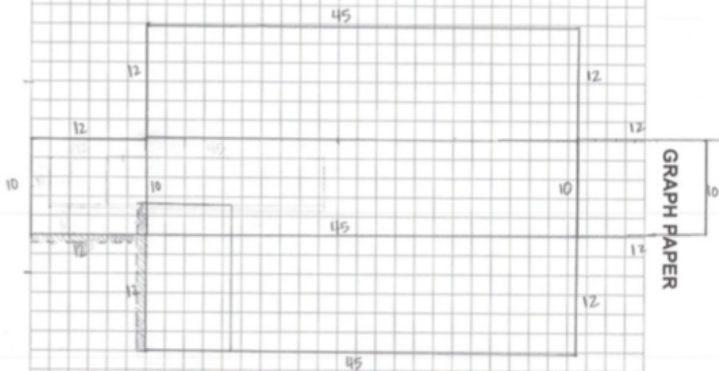
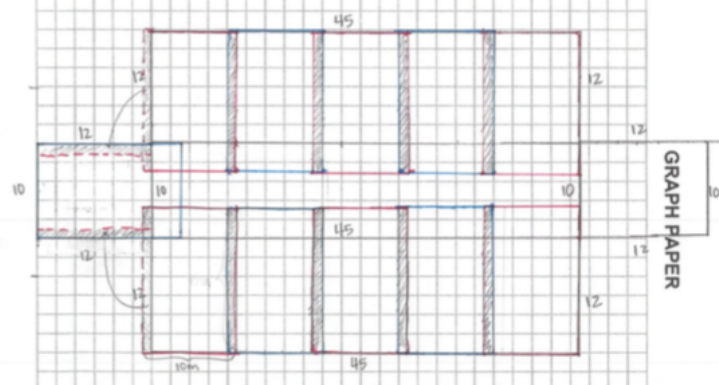


PROFICIENCY CHALLENGE 13 ANSWER KEY

AMV = "Answers May Vary"

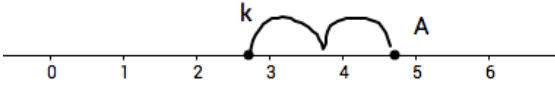
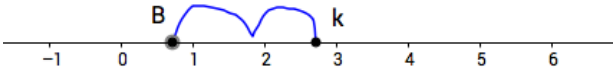
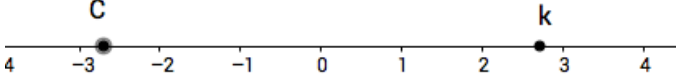
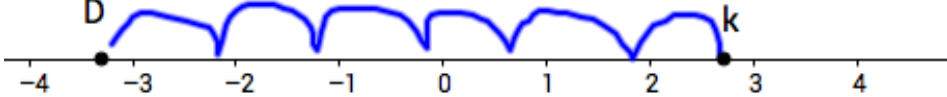
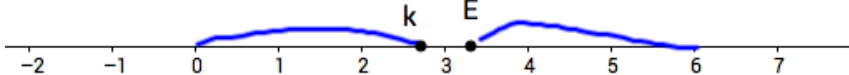
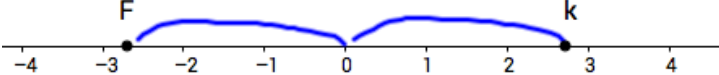
1	<p>The area of the original square is 9 cm^2. If we double the side length, the square is 36 cm^2. If we multiply the lengths by 10, the square is 900 cm^2.</p> <p>In general, if you multiply the length of a square's side by k the area will be k^2 as large.</p>
----------	--

2	468 treats fit in the pan. You can cut 26 half-inch "columns" and 18 half-inch "rows" from the pan.
a	$\frac{5}{8} \text{ in}^3$ since $\frac{1}{2} \cdot \frac{1}{2} \cdot 2\frac{1}{2} = \frac{5}{8}$
b	292.5 in^3

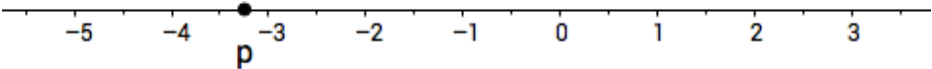
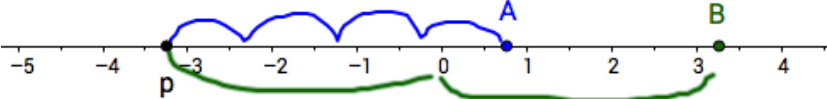
3	<p>a AMV; 16-18 tarps are needed depending on tarp placement.</p> <p>The solution may be difficult to visualize. We highly recommend either a model or a scaled drawing. Below you can see a scale drawing where each linear box represents 2 meters.</p> <div style="text-align: center;">  </div> <p>If we start with the shortest side of the building, and place one tarp, it will cover the side exactly with a bit covering the roof. That means when we tarp the adjacent side, we will need to wrap 1 meter around the shortest side as well. In the drawings below, pencil shading indicates where tarps overlap (remember 1 linear unit is 2 meters in the drawing). The alternating blue and red show different tarps.</p> <div style="text-align: center;">  </div>
----------	--

PROFICIENCY CHALLENGE 14 ANSWER KEY

AMV = "Answers May Vary"

1	<p>Monday's change resulted in a loss of \$600. Tuesday's change resulted in a gain of \$900. Wednesday there was no change.</p> <p>Over the course of the three days, his net, or overall, change was a gain of \$300.</p>
2 a	<p>Below you can see Point A is 2 units to the right of k.</p>  <p>A number line from 0 to 6 with tick marks at every integer. A point labeled 'k' is located at 3. A point labeled 'A' is located at 5. Two curved arrows above the line show a distance of 2 units from k to A.</p>
b	<p>Point B is exactly 2 units to the left of k.</p>  <p>A number line from -1 to 6 with tick marks at every integer. A point labeled 'k' is located at 3. A point labeled 'B' is located at 1. Two curved arrows above the line show a distance of 2 units from k to B.</p>
c	<p>Note that C is on the opposite side of 0 and the same distance from 0 as k.</p>  <p>A number line from -4 to 4 with tick marks at every integer. A point labeled 'C' is located at -3. A point labeled 'k' is located at 3.</p>
d	<p>Point D is 6 units to the left of k.</p>  <p>A number line from -4 to 4 with tick marks at every integer. A point labeled 'k' is located at 3. A point labeled 'D' is located at -3. Six curved arrows above the line show a distance of 6 units from k to D.</p>
e	<p>Note that the distance from 0 to k is the same as the distance from 6 to Point E. Thus E is at 6-k.</p>  <p>A number line from -2 to 7 with tick marks at every integer. A point labeled 'k' is located at 3. A point labeled 'E' is located at 6. A curved arrow above the line shows a distance of 3 units from 0 to k, and another curved arrow shows a distance of 3 units from 6 to E.</p>
f	<p>Notice that the distance from k to 0 is the same as 0 to F. Then F is at 0-k. Note that Point F is also in the same location as Point C (which was at -k).</p>  <p>A number line from -4 to 4 with tick marks at every integer. A point labeled 'k' is located at 3. A point labeled 'F' is located at -3. Two curved arrows above the line show a distance of 3 units from k to 0, and another curved arrow shows a distance of 3 units from 0 to F.</p>

PROFICIENCY CHALLENGE 14 ANSWER KEY (Continued)

3	AMV; For example: $p = -3.25$  <p>A number line from -5 to 3 with tick marks every 1 unit. A point labeled 'p' is marked at -3.25.</p>
ab	Point A is 4 units to the right of P. That is A is at 0.25. Point B is at 3.25 which is the absolute value of p.  <p>A number line from -5 to 4 with tick marks every 1 unit. Point p is at -3.25, point A is at 0.25, and point B is at 3.25. A blue wavy line connects p to A, and a green wavy line connects p to B.</p>
c	The distance between p and 2 is 5.25. It is 3.25 units from p to 0 and 2 units from 0 to 2.
d	AMV; Richard's statement is true for all values of p that are negative. When p is positive then $p = p $, which means the distance between them is 0.
4	$-\frac{3}{4}$ is closer to 0 because it is 0.75 units from 0, while $\frac{4}{3}$ is $1\frac{1}{3}$ units from 0.
5	-0.5 is halfway between -4 and 3.

PROFICIENCY CHALLENGE 15 ANSWER KEY

AMV = "Answers May Vary"

1	a	AMV; For example: (2,2), (-3,2), (-3,-3) and (2,-3)
	b	AMV; For example: (4,2), (-2,2), (-2,-2), and (4,-2)

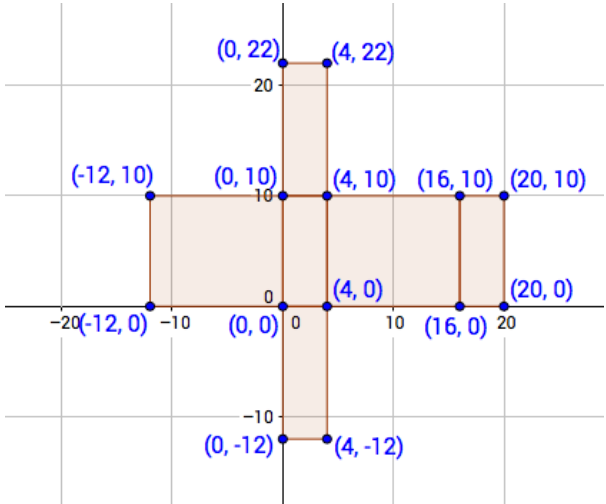
2	a	AMV; For example: (0,0), (8,0) and (0,8)
	b	AMV; For example: (0,0), (9.5,0) and (0,1)

3	a	$\left(\frac{1}{6}, -\frac{4}{5}\right)$
	b	(-2.3, 2.4)

4	a	See Figure 1 below. The reflection of A is $\left(3, -4\frac{1}{2}\right)$, the reflection of B is $\left(-1\frac{3}{4}, \frac{12}{5}\right)$, and the reflection of C is (0, 7).
	b	See Figure 2 below. The reflection of A is $\left(-3, 4\frac{1}{2}\right)$, the reflection of B is $\left(\frac{7}{4}, -\frac{12}{5}\right)$, and the reflection of C is (0, -7).

c	See Figure 3 below. The reflection of A is (-3, -4.5), the reflection of B is , and the reflection of C is (0, 7).		
	Figure 1	Figure 2	Figure 3

PROFICIENCY CHALLENGE 15 ANSWER KEY (Continued)

5 a	We apologize, this problem leads to an answer beyond students' grade level learning. We recommend changing the problem to a surface area of 54 square units.
b	AMV; For example, using the dimensions 4 units by 12 units by 10 units: 

PROFICIENCY CHALLENGE 16 ANSWER KEY

AMV = "Answers May Vary"

1	AMV.
	<p>One might assume or estimate that the average stride is 3 feet. Then to go one mile you would take 1,760 steps. To walk 1,000 miles, you would take 1,760,000 steps.</p> <p>1,000 km is less than 1,000 miles, so it would be fewer steps. We could convert from 1,000 km into miles and follow the same calculations.</p>
2	a $2 \div 4$ or 0.5 hours
	b $m \div 4$ hours
	c $\frac{m}{4} + \frac{m}{3}$ hours
3	There were at least 20 people who completed the survey.
	$45\% = \frac{45}{100} = \frac{9}{20}$. This means at a minimum, 9 of 20 people liked vanilla.