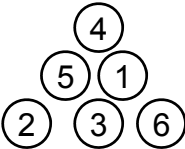# PROFICIENCY CHALLENGE 1 ANSWER KEY

AMV = "Answers May Vary"

1	$\frac{1}{11} = 0.090909090.....$ Since $0.0\overline{45}$ is half $0.0\overline{90}$, then $0.0\overline{45}$ is half of $\frac{1}{11}$ which is $\frac{1}{22}$.

2	AMV. As an example:

3	AMV. As an example:

5	0	7
6	4	2
1	8	3

4	AMV. Examples include: 9 tricycles and 1 bike; 7 tricycles and 4 bikes; 5 tricycles and 7 bicycles. Graphs should be properly labeled and contain some of the following ordered pairs: (9, 1) (7, 4) (5, 7) (3, 10) (1, 13). The points will fall on a line.

5	a	AMV. Examples include: $\frac{1}{2}, \frac{1}{3}, \frac{1}{7}$
	b	AMV. Examples include: $\frac{3}{2}, \frac{7}{2}, \frac{8}{3}$
	c	AMV. Examples include: $\frac{9}{8}, \frac{8}{7}$
	d	AMV. Examples include: $\frac{9}{2}, \frac{7}{1}$
	e	$\frac{1}{1000}$

PROFICIENCY CHALLENGE 2 ANSWER KEY

AMV = "Answers May Vary"

1		Students make accurate graphs and label the points appropriately.
	a	True
	b	True
	c	False
	d	False, the distance is 1. Distance cannot be negative.
		AMV. Students will probably identify (-1.5, 6) as a point (the midpoint) that is equidistant from the park and the post office.
		AMV. There are an infinite number of points that are equidistant from the park and the post office. Any ordered pair in the from (-1.5, *n*) will work.

2	AMV. There are many solutions/graphs that meet these requirements. Students should label coordinates accurately.
	Carlos is correct. Students should have the dorm and the science building on the same axis with the student center at the origin. Either axis can work.
	Juan's mistake is that the points on the graph are not vertically aligned and can't simply find the difference between the *y*-values to find the distance. Student explanations of error should be clear and logical.

PROFICIENCY CHALLENGE 3 ANSWER KEY

AMV = "Answers May Vary"

1	a	
	b	-12 and 12 -4 and 4 -7 and 7 -1 and 1 -5 and 5
	c	AMV. As an example: 12 + (-5) + (-7) = 0
	d	AMV. As an example: 12 and -7 or 1 and 4
	e	AMV. As an example: -12 and 7 or -1 and -4
	f	AMV. As an example: 12 – 4 = 8 or 7 – (-1) = 8
	g	AMV. As an example: -(5) – (-2) = -3 or -(7) – (-4) = -3

2	Brianna is correct. The sum of a number and its opposite is zero. Explanation may vary; For example: -100 + 100 = 0, -99 + 99 = 0, -98 + 98 = 0, … -3 + 3 = 0, -2 + 2 = 0, -1 + 1 = 0

3	-90 Explanations may vary. For example: -20 + (-19) + (-18) + (-17) + (-16) + (-15) + … + (15) = -20 + (-19) + (-18) + (-17) + (-16) + 0 = -90 Another example of an explanation could be: Since the sum of the integers from -15 to 15 is zero, I only needed to find the sum of -20 + (-19) + (-18) + (-17) + (-16).

4	AMV. Examples include: Take 3 steps to the left and then 3 steps to the right – how many steps away from the starting point? Have $50 and then spend $50 – how much money left? Lose 10 lbs. and then gain 10 lbs. – what is the net weight gain or loss?

5	AMV. Examples include: There are 6 apples in a basket and then do not add any more apples into the basket – how many apples in the basket now? Sleep for 7 hours and then sleep no extra hours – how many hours slept in total?

6	There were 47 lines on the page. Explanations may vary. As an example: Numbers that have a remainder of 2 when divided by 3: 5, 8, 11, 14, 17, 20, 23, 26, 29, 32, 35, 38, 41, 44, 47, 50, 53… Numbers that have a remainder of 2 when divided by 5: 7, 12, 17, 22, 27, 32, 37, 42, 47, 52, 57… Numbers that have a remainder of 5 when divided by 7: 12, 19, 26, 33, 40, 47, 54, 61… The first number in common in these lists is 47.

PROFICIENCY CHALLENGE 4 ANSWER KEY

1	a	4.9, 6
	b	-5.2, $-\dfrac{7}{3}$, -6, -1.75, 1.34
	c	-6
	d	4.9, $\dfrac{3}{2}$, 6, -1.75, 1.34

2	D (3.1, -4.5) $F\left(-\dfrac{2}{3}, -4\dfrac{3}{5}\right)$ Rectangle *ABCD* has the greater perimeter. Perimeter of rectangle *ABCD* = 6 units; Perimeter of *EFGH* $\approx$ 4.3 units