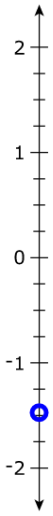
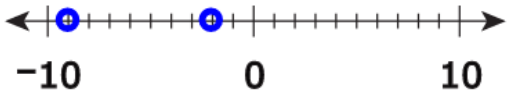
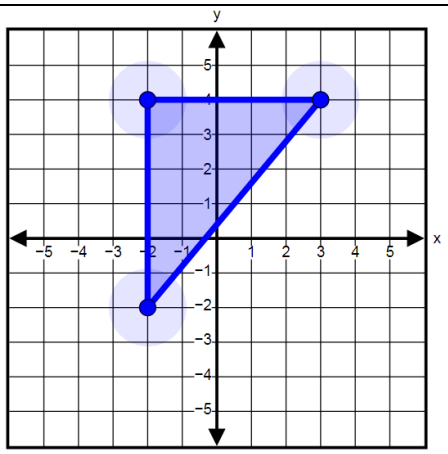
Released Test Answer and Alignment Document

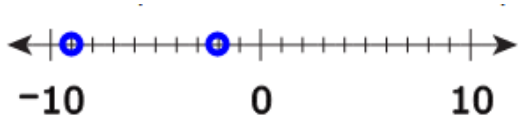
Mathematics – Grade 6

Spring 2017

Item Number	Answer Key	Evidence Statement Key
1.	A, C, D, F	6.RP.1
2.	14	6.NS.1-2
3.	B	6.NS.6b-1
4.	10.22627	6.NS.3-3
5.	B	6.EE.1-1
6.	605	6.NS.2
7.	A	6.NS.7c-1
8.	A, D	6.EE.4
9.	95.369	6.NS.3-1
10.		6.NS.6c-1
11.	A	6.NS.1-2
12.	$26.25	6.Int.1
13.	$R\left(\boxed{-\frac{7}{2}}, \boxed{-2}\right)$	6.NS.6c-2

14.	B, E	6.SP.3
15.	A, E	6.EE.2b
16.	Part A: C Part B: 6336	6.G.1
17.	Part A:  Part B: See Rubric	6.C.4
18.	D, E	6.EE.5-2
19.	$1.62	6.RP.3c-1
20.	A, E	6.EE.2a
21.	Part A: 13.75 Part B: A Part C: 28.5 or equivalent Part D: 4 ounces of grape drink mix make approximately 1.7 quarts of grape drink. 4 ounces of strawberry drink mix make approximately 34 quarts of strawberry drink.	6.RP.3b
22.	1.6 kilometers	6.RP.3d
23.	See Rubric	6.C.8-1
24.	Part A: C Part B: 36	6.EE.7
25.	Part A: 64 cubic inches Part B: See Rubric Part C: See Rubric	6.D.2

26.	 Part A: Part B: 5	6.G.3
27.	Part A: See Rubric Part B: See Rubric	6.C.9
28.	See Rubric	6.D.1
29.	Part A: 42.5 Part B: A	6.SP.5

#17 Rubric Part A	
Score	**Description**
1	Student response includes the following element. • **Computation component** = 1 point ○ The student correctly plotted points at –2 and –9 on the number line. Sample Student Response: 
0	Student response is incorrect or irrelevant.

#17 Rubric Part B	
Score	**Description**
2	Student response includes the following 2 elements. • **Reasoning component** = 2 points ○ The student shows the correct relationship between the two integers using an inequality symbol. ○ The student provides an explanation of the relationship between the two integers based on the positions on the number line. Sample Student Response: $-2 > -9$ –2 is greater than –9 because it is further to the right on the number line. **Note:** • The student may receive a combined total of 2 points if the student incorrectly locates the numbers on the number line but writes the inequality correctly based on the graphed points and correctly explains the relationship between the order of two numbers and their locations on the number line.
1	Student response includes 1 of the 2 elements.
0	Student response is incorrect or irrelevant.

#23 Rubric	
Score	**Description**

3	Student response includes the following 3 elements.
	
	• **Reasoning component** = 1 point
	  ○ The student provides a correct explanation of the student's error in reasoning.
	• **Computation component** = 1 point
	  ○ The student provides the correct ratio of red to blue marbles, 4:3
	• **Modeling component** = 1 point
	  ○ The student provides valid work or explanation for the ratio of red to blue marbles.
	
	Sample Student Response:
	
	The student's reasoning is incorrect because he did not account for the total number of marbles in the bag. Since there are 36 marbles in the bag and there are 5 red marbles for every 4 blue marbles, the number of red and blue marbles are:
	Red marbles: $36 \times \frac{5}{9} = 20$ or equivalent
	Blue marbles: $36 \times \frac{4}{9} = 16$ or equivalent
	
	If 1 blue marble is taken away, then there are 20 red marbles and 15 blue marbles. This means the ratio of red to blue marbles is 4:3.

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.

#25 Rubric Part A	
Score	**Description**
1	Student response includes the following element. • **Computation component** = 1 point ○ The student provides the correct response of 64 cubic inches.
0	Student response is incorrect or irrelevant.

#25 Rubric Part B	
Score	**Description**
2	Student response includes the following 2 elements. • **Computation component** = 1 point ○ The student correctly provides the greatest number of cubes that can fit in the box, 216. • **Reasoning component** = 1 point ○ The student provides valid work or explanation of a strategy for finding the number of cubes that will fit in the box. Sample Student Response: The bottom layer of the box will have $36 \div 4 = 9$ cubes across the front of the box and $24 \div 4 = 6$ cubes along the side of the box. That means a total of $6 \times 9 = 54$ cubes fit on the bottom of the box. Since the height is 19 inches, and $19 \div 4 = 4.75$, only 4 layers of cubes will fit in the box. So the total number of cubes that will fit in the box is $54 \times 4 = 216$.
1	Student response includes 1 of the 2 elements.
0	Student response is incorrect or irrelevant.

#25 Rubric Part C	
Score	**Description**
3	Student response includes each of the following 3 elements. • **Computation component** = 1 point ○ The student provides the correct amount of packing material needed to fill the empty space in the box, 2592 cubic inches. • **Reasoning component** = 2 points ○ The student provides valid work or explanation of a strategy for determining the height of the empty space in the box. ○ The student provides valid work or explanation of a strategy for determining the volume of the needed packing material. Sample Student Response: There are 4 layers of cubes in the box. That means the cubes reach a height of 16 inches. The amount of space to the top of the box is $19 - 16 = 3$ inches.

	The total volume of the packing material needed is 36 inches $\times$ 24 inches $\times$ 3 inches $=$ 2592 cubic inches. Notes: • The student may receive modeling points if the student shows a sufficient modeling process for some or all of the 3 parts indicated but make one or more computational errors resulting in incorrect answers. • The student may receive computation points if they compute the correct answer(s) to one or both of the 2 parts but show no work or insufficient work to indicate a correct modeling process.
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.

#27 Rubric Part A	
Score	**Description**
2	Student response includes the following 2 elements. • **Computation component** = 1 point ○ The student provides that Diego is incorrect and gives the correct volume of one box, 390 cubic inches. • **Reasoning component** = 1 point ○ The student provides valid work or explanation for calculating the volume of one box. Sample Student Response: Diego is incorrect. To find the volume of one box, find the value of 13 $\times$ 5 $\times$ 6, which is 390 cubic inches. Note: • The student may receive a total of 1 point if the reasoning process is correct but the student makes a computational error resulting in an incorrect answer.
1	Student response includes 1 of the 2 elements.
0	Student response is incorrect or irrelevant.
#27 Rubric Part B	
Score	**Description**
2	Student response includes the following 2 elements. • **Computation component** = 1 point

	○ The student correctly selects the carton that will completely contain 8 boxes with the least amount of packing material, Carton C. • **Reasoning component** = 1 point ○ The student provides valid work or explanation for determining which carton meets the conditions. Sample Student Response: I found the volume of each carton. Carton A has a volume of $10 \times 13 \times 28 = 3640$ cubic inches. Carton B has a volume of $10 \times 14 \times 22 = 3080$ cubic inches. Carton C has a volume of $11 \times 12 \times 26 = 3432$ cubic inches. The boxes can be put into Carton C so that there are 4 boxes on the bottom layer and 2 layers that each has a height of 13 inches. Carton C can hold 8 boxes with the least amount of packing material. Notes: • 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. • The student may receive a total of 2 points if he or she computes the correct answers but show no work or insufficient work to indicate a correct reasoning process.
1	Student response includes 1 of the 2 elements.
0	Student response is incorrect or irrelevant.

#28 Rubric	
Score	**Description**
3	Student response includes the following 3 elements. • **Reasoning component** = 2 points ○ The student applies valid proportional reasoning to find equivalent ratios. ○ The student provides a valid procedure for determining the numbers of bookmarks and posters that must be added to the box. • **Computation component** = 1 point ○ The student provides the correct number of bookmarks and posters, 3 bookmarks and 1 poster. Sample Student Response: The ratio of bookmarks to pencils was 12:8 or 3:2. The teacher adds 2 pencils so now there are a total of 10 pencils. The ratio of bookmarks to pencils, 3:2, is equivalent to 15:10, so he must add 3 bookmarks to make 15 in all. The ratio of posters to pencils was 4:8 or 1:2. The ratio 1:2 is equivalent to 5:10, so he must

<table>
<tr><td></td><td>add 1 poster to make 5 in all.

Additional Example:

<table><tr><td>Bookmark</td><td>12</td><td>3</td><td>15</td></tr><tr><td>Pencil</td><td>8</td><td>2</td><td>10</td></tr><tr><td>Poster</td><td>4</td><td>1</td><td>5</td></tr></table>
The teacher must add 1 poster. The teacher must add 3 bookmarks.

Note:
Other valid approaches are acceptable.</td></tr>
<tr><td>2</td><td>Student response includes 2 of the 3 elements.</td></tr>
<tr><td>1</td><td>Student response includes 1 of the 3 elements.</td></tr>
<tr><td>0</td><td>Student response is incorrect or irrelevant.</td></tr>
</table>