Mathematics – Grade 6

Practice Test Answer and Alignment Document

Pencil-and-Paper ABO

The following pages include the answer key for all machine-scored items, followed by the rubrics for the hand-scored items.

- The rubrics show sample student responses. Other valid methods for solving the problem can earn full credit unless a specific method is required by the item.
- In items where the scores are awarded for full and partial credit, the definition of partial credit will be confirmed during range-finding (reviewing sets of real student work).
- If students make a computation error, they can still earn points for reasoning or modeling.

Unit 1

Item Number	Answer Key	Evidence Statement Key/Content Scope
1.	**D**	6.RP.1
2.	**A**	6.NS.1-2
3.	−3.5	6.NS.6c-2
4.	**1.04**	6.NS.3-4
5.	**B, E**	6.EE.1-1
6.	**432**	6.NS.2
7.	**B**	6.NS.7a
8.	**16**	6.NS.4-1
9.	**B, D**	6.EE.4
10.	**5400**	6.G.2-1
11.	−4	6.NS.6c-1

12.	**D**	6.EE.6
13.	**C**	6.SP.1
14.	**A**	6.SP.3
15.	**C**	6.EE.2a
16.	Part A: **24** Part B: **C**	6.G.1
17.	Part A: **20** Part B: **4**	6.SP.5

Unit 2

Item Number	Answer Key	Evidence Statement Key/Content Scope
18.	**B**	6.EE.5-2
19.	**30**	6.RP.3c-1
20.	See rubric	6.D.3/6.RP.3
21.	Part A: **56** Part B: **12** Part C: **28** Part D: **24**	6.RP.3b
22.	Part A: **90** Part B: **24**	6.RP.3c-2
23.	See rubric	6.C.5/6.NS.8

Unit 3

Item Number	Answer Key	Evidence Statement Key/Content Scope
24.	Part A: see rubric Part B: see rubric	6.C.3/6.NS.1
25.	**C, 1.60**	6.EE.7

26.	Part A: see rubric Part B: see rubric	6.D.2/5.NF.3 and 5.NF.6
27.	**C**	6.RP.3d
28.	See rubric	6.D.1/6.RP.2 and 6.RP.3
29.	See rubric	6.C.7/6.EE.4

Rubrics start on the next page.

Unit 2 #20 Rubric	
Score	**Description**
3	Student response includes each of the following 3 elements. • Valid estimate for the company's total sales in year 4 • Valid explanation for determining the estimate • Valid work to support the estimate Sample Student Response: I estimated the sales of yellow golf balls in year 4 to be about 250,000. Since the company expects sales to continue to increase and the table shows sales increased by about 21,000 in year 2 and by about 11,000 in year 3, I estimated an increase of about 15,000 in year 4. Adding $237,000 + 15,000$, I get 252,000 or about 250,000 yellow golf balls sold in year 4. Next, I determined the number of white golf balls sold in year 4 using the given ratio. Since I estimated 250,000 yellow golf balls and the ratio of yellow to white is 1:5, I multiplied $2,500 \times 5$ get 1,250,000 white golf balls. I added $250,000 + 1,250,000$ to get an estimate of 1.5 million golf balls sold in year 4. Next, I determined the number of boxes sold in year 4 to be 125,000 since $1,500,000 \div 12 = 125,000$. Finally, I came up with my estimate by multiplying the total number of boxes by \$24 per box (rounded up from \$23.94). So my estimate is \$3 million for year 4 since $125,000 \times 24 = 3,000,000$. Notes: • The student may receive a combined total of 2 points if the modeling process is correct, but the student makes one or more computational errors resulting in an incorrect answer. • The student may receive a total of 1 point if he or she computes the correct answer, but shows 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.

Unit 2 #23 Rubric	
Score	**Description**
4	Student response includes each of the following 4 elements.

	• Correct distance from point P to point Q, 5 • Valid explanation for determining the distance from point P to point Q • Valid explanation for determining the value of n • Correct value for n, 5 Sample Student Response: The distance from point P to point Q is 5 units because point P is 3 units above the x axis. Point Q is 2 units below the x axis. So Point Q is 5 units below point P, therefore the distance from point P to point R is also 5 units. Since R is on the y axis, it has an x coordinate of 0. So the x coordinate of point P is 5 units to the right and is 5. The value for n is 5.
3	Student response includes 3 of the 4 elements.
2	Student response includes 2 of the 4 elements.
1	Student response includes 1 of the 4 elements.
0	Student response is incorrect or irrelevant.

Unit 3 #24 Rubric Part A	
Score	**Description**
2	Student response includes each of the following 2 elements. • Correct number of pieces, 6 • Valid explanation Sample Student Response: The number line diagram shows segments marked that are spaced $\frac{1}{8}$ unit apart. I know James' board is $\frac{3}{4}$ foot long. I counted the number of $\frac{1}{8}$ units until I got to $\frac{3}{4}$ on the number line. There are 6 of these. So James can cut a total of 6 pieces from the board.
1	Student response includes 1 of the 2 elements.
0	Student response is incorrect or irrelevant.

Unit 3 #24 Rubric Part B	
Score	**Description**
1	Student response includes the following element. • Correct Equation

	Sample Student Response: $\frac{3}{4} \div \frac{1}{8} = 6$
0	Student response is incorrect or irrelevant.

Unit 3 #26 Rubric Part A	
Score	**Description**
2	Student response includes each of the following 2 elements. • Correct number of cups of trail mix per hiker, $2\frac{1}{3}$ cups • Valid work or explanation shown Sample Student Response: 8 bags of trail mix at $3\frac{1}{2}$ cups per bag is $8\left(3\frac{1}{2}\right) = \left(\frac{8}{1}\right)\left(\frac{7}{2}\right) = \frac{56}{2} = 28$ cups. 28 cups divided among 12 hikers is $\frac{28}{12} = \frac{7}{3} = 2\frac{1}{3}$ cups of trail mix per hiker.
1	Student response includes 1 of the 2 elements.
0	Student response is incorrect or irrelevant.

Unit 3 #26 Rubric Part B	
Score	**Description**
4	Student response includes each of the following 4 elements. • Correct number of miles hiked by each hiker, 7 miles • Correct work shown or explanation given to determine the number of miles hiked by each hiker • Correct total amount of water brought by each hiker, gallons • Correct work shown or explanation given to determine the total amount of water brought by each hiker Sample Student Response: The distance to the scenic lookout: $2 + 1\frac{3}{4} = \frac{8}{4} + \frac{7}{4}$ $= \frac{15}{4}$ The distance back from the lookout is:

	$\frac{15}{4} - \frac{1}{2} = \frac{15}{4} - \frac{2}{4}$ $= \frac{13}{4}$ The total distance is: $\frac{15}{4} + \frac{13}{4} = \frac{28}{4}$ $= 7$ The total amount of water brought by each hiker is $\frac{1}{4}(7) = \frac{7}{4} = 1\frac{3}{4}$ gallons.
3	Student response includes 3 of the 4 elements.
2	Student response includes 2 of the 4 elements.
1	Student response includes 1 of the 4 elements.
0	Student response is incorrect or irrelevant.

Unit 3 #28 Rubric	
Score	**Description**
3	Student response includes the following 3 elements. • Correct total number of fish • Correct ratio of small fish to large fish based on total number of fish • Valid work shown or explanation given Sample Student Response: 5 small fish for every 10 gallons means 1 small fish for every 2 gallons. There are 200 gallons in the tank, so there will be 100 small fish. 8 large fish for every 40 gallons means 1 large fish for every 5 gallons. There are 200 gallons in the tank, so there will be 40 large fish. $100 + 40 = 140$ total fish The ratio of small fish to large fish will be 100 to 40 or 5 to 2. Note: Any equivalent ratio is acceptable. Also, students may show or explain their work using other valid strategies, such as making a table of equivalent ratios.
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.

Unit 3 #29 Rubric	
Score	**Description**
3	Student response includes the following 3 elements. • Explanation of why Brianna's thinking is incorrect • Explanation of how to determine which expressions are equivalent • Identifies expressions A and C as equivalent Sample Student Response: Brianna only checked the value of each expression for one substitution of x. To check which expressions are equivalent, I need to check that they are the same value for any substitution of x. Since expressions A and C are both equivalent to the expression $6x - 4$, they will be equivalent for any substitution of x, so they are equivalent.
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.