

Practice Test Answer and Alignment Document

Mathematics – Grade 6

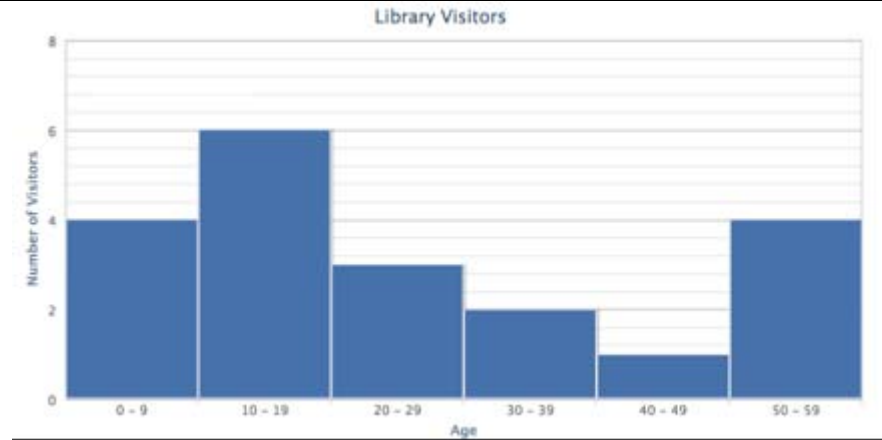
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The following pages include the answer key for all machine-scored items, followed by the rubrics for the hand-scored items.

- 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.	For every <input type="text" value="4"/> mystery books checked out, <input type="text" value="3"/> nonfiction books were checked out.	6.RP.1
2.	A	6.NS.1-2
3.	-3.5	6.NS.6c-2
4.	1.04	6.NS.3-4
5.	$h > 6000$	6.EE.8
6.	432	6.NS.2
7.	9	6.NS.8
8.	16	6.NS.4-1
9.	B, D	6.EE.4

10.	77.505	6.NS.3-1
11.	5400	6.G.2-1
12.	-4	6.NS.6c-1
13.	$36.75 - 3x$ or equivalent	6.EE.6
14.	C	6.SP.1
15.	14	6.NS.1-2
16.	22.31	6.Int.1
17.	(3, -2)	6.NS.6b-2
18.		6.SP.4

Unit 2

Item Number	Answer Key	Evidence Statement Key/Content Scope
1.	B, C	6.EE.2a
2.	Part A: $\frac{3}{8}$ or equivalent Part B: $\frac{1}{64}$ or equivalent	6.G.2-2
3.	See rubric	6.C.7/6.EE.4
4.	B	6.EE.5-2
5.	30	6.RP.3c-1
6.	See rubric	6.D.3/6.RP.3

7.	11	6.EE.2c-1
8.	Part A: 56 Part B: 12 Part C: 28 Part D: 24	6.RP.3b
9.	The ribbon costs <input type="text" value="\$0.008"/> per <input type="text" value="centimeter"/> .	6.RP.3d
10.	See rubric	6.C.5/6.NS.8
11.	Part A: 1.25 Part B: $y = 5.5x$ or equivalent	6.EE.9

Unit 3

Item Number	Answer Key	Evidence Statement Key/Content Scope
1.		6.RP.3a
2.	Part A: see rubric Part B: see rubric	6.C.3/6.NS.1
3.	Part A: <input type="text" value="t"/> <input type="text" value="x"/> <input type="text" value="8"/> = <input type="text" value="39.60"/> Part B: 4.95	6.EE.7
4.	Part A: see rubric	6.D.2/5.NF.3 &

	Part B: see rubric	5.NF.6
5.	Part A: 24 Part B: $\frac{1}{4}$ or equivalent	6.G.1
6.	Part A: see rubric Part B: see rubric	6.C.9/ 5.MD.5
7.	Part A: 90 Part B: 24	6.RP.3c-2
8.	See rubric	6.D.1/ 6.RP.2 & 6.RP.3
9.	Part A: 20 Part B: 4	6.SP.5

Rubrics start on the next page.

Unit 2 #3 Rubric

Score	Description
3	<p>Student response includes the following 3 elements.</p> <ul style="list-style-type: none"> • Explanation of why Brianna’s thinking is incorrect • Explanation of how to determine which expressions are equivalent • Identifies expressions A and C as equivalent <p>Sample Student Response:</p> <p>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.</p>
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 #6 Rubric

Score	Description
3	<p>Student response includes each of the following 3 elements.</p> <ul style="list-style-type: none"> • Valid estimate for the company’s total sales in year 4 • Valid explanation for determining the estimate • Valid work to support the estimate <p>Sample Student Response:</p> <p>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</p>

	<p>is 1:5, I multiplied $2,500 \times 5$ get 1,250,000 white golf balls.</p> <p>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 $125,000 \times 24 = 3,000,000$.</p> <p>Notes:</p> <ul style="list-style-type: none"> • 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 #10 Rubric	
Score	Description
4	<p>Student response includes each of the following 4 elements.</p> <ul style="list-style-type: none"> • 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 <p>Sample Student Response:</p> <p>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.</p> <p>The value for n is 5.</p>
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 #2 Rubric Part A

Score	Description
2	<p>Student response includes each of the following 2 elements.</p> <ul style="list-style-type: none"> • Correct number of pieces, 6 • Valid explanation <p>Sample Student Response:</p> <p>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.</p>
1	Student response includes 1 of the 2 elements.
0	Student response is incorrect or irrelevant.

Unit 3 #2 Rubric Part B

Score	Description
1	<p>Student response includes the following element.</p> <ul style="list-style-type: none"> • Correct Equation <p>Sample Student Response:</p> $\frac{3}{4} \div \frac{1}{8} = 6$
0	Student response is incorrect or irrelevant.

Unit 3 #4 Rubric Part A

Score	Description
2	<p>Student response includes each of the following 2 elements.</p> <ul style="list-style-type: none"> • Correct number of cups of trail mix per hiker, $2\frac{1}{3}$ cups • Valid work or explanation shown <p>Sample Student Response:</p>

	<p>8 bags of trail mix at $3\frac{1}{2}$ cups per bag is</p> $8\left(3\frac{1}{2}\right) = \left(\frac{8}{1}\right)\left(\frac{7}{2}\right) = \frac{56}{2} = 28 \text{ cups.}$ <p>28 cups divided among 12 hikers is $\frac{28}{12} = \frac{7}{3} = 2\frac{1}{3}$ cups of trail mix per hiker.</p>
1	Student response includes 1 of the 2 elements.
0	Student response is incorrect or irrelevant.
Unit 3 #4 Rubric Part B	
Score	Description
4	<p>Student response includes each of the following 4 elements.</p> <ul style="list-style-type: none"> • 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 <p>Sample Student Response:</p> <p>The distance to the scenic lookout:</p> $2 + 1\frac{3}{4} = \frac{8}{4} + \frac{7}{4}$ $= \frac{15}{4}$ <p>The distance back from the lookout is:</p> $\frac{15}{4} - \frac{1}{2} = \frac{15}{4} - \frac{2}{4}$ $= \frac{13}{4}$ <p>The total distance is:</p> $\frac{15}{4} + \frac{13}{4} = \frac{28}{4}$ $= 7$ <p>The total amount of water brought by each hiker is $\frac{1}{4}(7) = \frac{7}{4} = 1\frac{3}{4}$ gallons.</p>
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.
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Unit 3 #6 Rubric Part A

Score	Description
2	<p>Student response includes each of the following 2 elements.</p> <ul style="list-style-type: none"> • Explanation of why the student’s reasoning is incorrect • Corrected volume, 630 cubic inches <p>Sample Student Response:</p> <p>The student’s reasoning is incorrect because they did not count the top layer as part of the height. The calculation should have been 63×10, which equals a total of 630 cubes. Therefore, the volume is 630 cubic inches.</p>
1	Student response includes 1 of the 2 elements.
0	Student response is incorrect or irrelevant.

Unit 3 #6 Rubric Part B

Score	Description
2	<p>Student response includes each of the following 2 elements.</p> <ul style="list-style-type: none"> • Correct explanation or work shown to find the height of the second box • Correct height of the second box <p>Sample Student Response:</p> <p>Volume is equal to the area of the base times the height. $V = Bh$ $756 = 63 \times \text{height of cubes}$ $\frac{756}{63} = \text{height of cubes}$ $12 = \text{height of cubes}$ So, the height of the box is 12 inches since there are 12 1-inch cubes stacked on top of each other.</p>
1	Student response includes 1 of the 2 elements.
0	Student response is incorrect or irrelevant.

Unit 3 #8 Rubric

Score	Description
3	<p>Student response includes the following 3 elements.</p> <ul style="list-style-type: none"> • 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 <p>Sample Student Response:</p> <p>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.</p> <p>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.</p> <p>$100 + 40 = 140$ total fish</p> <p>The ratio of small fish to large fish will be 100 to 40 or 5 to 2.</p> <p>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.</p>
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.