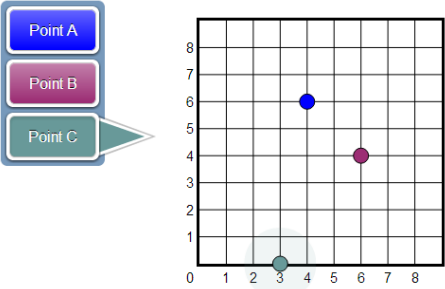
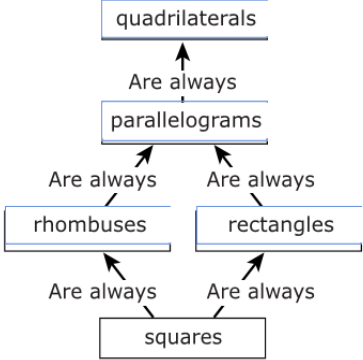


The following pages include the answer key for all machine-scored items, followed by the rubrics for the hand-scored items.

- 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.	B	5.OA.3
2.	$\frac{1}{3} + \frac{3}{6} = \frac{2}{6} + \frac{3}{6}$	5.NF.1-1
3.	20	5.NBT.7-1
4.	Part A: see rubric Part B: see rubric Part C: see rubric	5.D.2/4.MD.3
5.	The value of the 6 in 26.495 is <input type="text" value="10 times"/> the value of the 6 in 17.64. The value of the 3 in 0.931 is <input type="text" value="1/10"/> the value of the 3 in 0.384.	5.NBT.1

6.		5.G.1
7.	30	5.MD.4
8.	See rubric	5.C.5-1/5.NF.2
9.	<p>The product of <math>\frac{3}{5}</math> and 4 is <input type="text" value="less than"/> 4.</p> <p>The product of <math>1\frac{1}{2}</math> and 2 is <input type="text" value="greater than"/> 2.</p> <p>The product of <math>\frac{5}{2}</math> and <math>\frac{13}{4}</math> is <input type="text" value="greater than"/> <math>\frac{13}{4}</math>.</p>	5.NF.5a
10.	$\frac{1}{12}$	5.NF.2-1
11.	Part A: 31,104 Part B: 10,368	5.Int.2
12.	 <p>The positions of rectangles and rhombuses may be switched.</p>	5.G.4

## Unit 2

Item Number	Answer Key	Evidence Statement Key/Content Scope
1.	<input type="text" value="9 - (2 + 4)"/> <input type="text" value="2 + 4 - 9"/> <input type="text" value="9 - 2 + 4"/>	5.OA.2-1

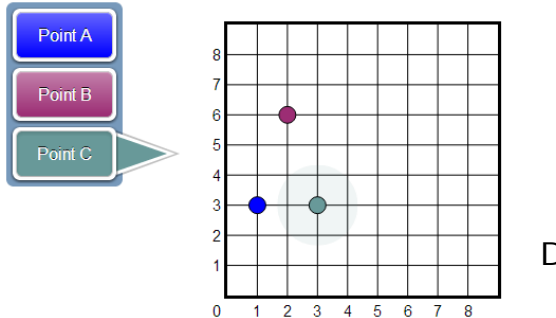
2.	Part A: D Part B: B	5.NF.3-2
3.	See rubric	5.D.1/5.NBT.5
4.	4.408 <input type="text" value="&gt;"/> four and forty-eight thousandths six hundred ninety-one and five hundredths <input type="text" value="&gt;"/> $6 \times 100 + 9 \times 10 + 1 \times 1 + 8 \times \frac{1}{1,000}$	5.NBT.3b
5.	B, E	5.NF.2-2
6.	Part A: C Part B: 75	5.MD.5c
7.	529375	5.NBT.5
8.	C	5.NF.4a-2
9.	$\frac{3}{16}$	5.NF.6-1

### Unit 3

Item Number	Answer Key	Evidence Statement Key/Content Scope
1.	D	5.NF.3-2
2.	D, E	5.NBT.3a
3.	See rubric	5.D.1/5.NF.4 and 5.NF.6
4.	Part A: 0.63 Part B: 63	5.NBT.Int.1
5.	$\frac{17}{20}$	5.NF.1-3
6.	See rubric	5.C.4-3/5.NBT.6

### Unit 4

Item Number	Answer Key	Evidence Statement Key/Content Scope
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1.	0.525	5.NBT.7-3								
2.	27	5.NF.7c								
3.	<p>Part A:</p>  <p>Part B:</p>	5.G.2								
4.	59	5.NBT.6								
5.	<p>7 mm = <input type="text" value="0.7"/> cm</p> <p>7 cm = <input type="text" value="0.07"/> m</p> <p><input type="text" value="7000"/> m = 7 km</p>	5.MD.1-1								
6.	Part A: see rubric Part B: see rubric	5.C.7-4/4.NF.2								
7.	D	5.NF.3-1								
8.	5,120	5.MD.5b								
9.	See rubric	5.C.1-3/5.MD.5a								
10.	$\frac{15}{48}$ or equivalent	5.NF.4b-1								
11.	A	5.G.3								
12.	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td><input type="text" value="5.066"/></td> <td><input type="text" value="5.079"/></td> <td><input type="text" value="5.103"/></td> <td><input type="text" value="5.108"/></td> </tr> <tr> <td>5.07</td> <td>5.08</td> <td>5.10</td> <td>5.11</td> </tr> </table>	<input type="text" value="5.066"/>	<input type="text" value="5.079"/>	<input type="text" value="5.103"/>	<input type="text" value="5.108"/>	5.07	5.08	5.10	5.11	5.NBT.4
<input type="text" value="5.066"/>	<input type="text" value="5.079"/>	<input type="text" value="5.103"/>	<input type="text" value="5.108"/>							
5.07	5.08	5.10	5.11							
13.	Part A: 480 Part B: 3	5.MD.1-2								

Rubrics start on the next page.

Unit 1 #4 Rubric Part A

Score	Description
2	Student response includes each of the following 2 elements: <ul style="list-style-type: none"> <li>• Computation component: 486 square feet</li> <li>• Modeling component: <math>18 \times 27 = g</math></li> </ul>
1	Student response contains 1 of the 2 elements.
0	Student response is incorrect.

Unit 1 #4 Rubric Part B

Score	Description
3	Student response includes each of the following 3 elements. <ul style="list-style-type: none"> <li>• Modeling component: The student provides an expression to represent the total cost of the fence and gate. For example: "<math>43 \times (18 + 18 + 27 + 27 - 3) + 128</math>" OR other valid expression.</li> <li>• Modeling component: The student explains that the expression in parentheses "<math>18 + 18 + 27 + 27 - 3</math>" is needed to find the perimeter of the lawn minus the gate to find the length of fence needed.</li> <li>• Modeling component: The student explains that the length of fence determined has to be multiplied by the cost of the fence and then the cost of the gate has to be added to the result.</li> </ul> Note: The term <i>perimeter</i> does not have to be used.
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 1 #4 Rubric Part C

Score	Description
1	Computation component: \$3,869  Note: A student who correctly evaluates an incorrect expression for finding the total cost of the fence and gate will receive the computation point.

Unit 1 #8 Rubric

Score	Description
3	Student response includes each of the following 3 elements. <ul style="list-style-type: none"> <li>• Reasoning component: Valid explanation of why the Craig's answer is not reasonable</li> </ul>

	<ul style="list-style-type: none"> <li>Computation component: Correct number of miles Craig rode is <math>\frac{9}{8}</math></li> <li>Reasoning component: Valid explanation using number line to show why answer is correct</li> </ul> <p>Sample Student Response:</p> <p>Craig's answer is not reasonable because <math>\frac{5}{8}</math> is more than <math>\frac{1}{2}</math> and he is adding <math>\frac{1}{2}</math> to a number that is more than <math>\frac{1}{2}</math> so his answer should be more than 1.</p> <p>Craig rode <math>\frac{5}{8} + \frac{1}{2} = \frac{5}{8} + \frac{4}{8} = \frac{9}{8}</math> miles.</p> <p>Since <math>\frac{4}{8} = \frac{1}{2}</math>, I start at <math>\frac{5}{8}</math> on the number line and move over 4 more <math>\frac{1}{8}</math>s to add <math>\frac{5}{8} + \frac{4}{8}</math>. Now I am at the number <math>\frac{9}{8}</math> so I know my answer is correct.</p>
<b>2</b>	Student response includes 2 of the 3 elements. If a computation error is made, the student may still get points for reasoning.
<b>1</b>	Student response includes 1 of the 3 elements.
<b>0</b>	Student response is incorrect or irrelevant.

Unit 2 #3 Rubric	
Score	Description
<b>3</b>	<p>Student response contains the following 3 elements.</p> <ul style="list-style-type: none"> <li>Computation component: 63 cases of water.</li> <li>Modeling component: The student models or shows how to calculate the total number of water bottles needed.</li> <li>Modeling component: The student models or shows how to calculate the total number of cases of water bottles needed.</li> </ul> <p>Sample Student Response:</p> <p>I need to multiply to find the number of bottles the athletes, coaches, and judges will get each day.</p> <ul style="list-style-type: none"> <li>Each athlete will get 4 bottles, and there are 117 athletes, and <math>117 \times 4 = 468</math>, so the athletes need a total of 468 bottles each day.</li> <li>Each coach will get 3 bottles, and there are 7 coaches, and</li> </ul>

	<p><math>7 \times 3 = 21</math>, so the coaches will need a total of 21 bottles each day.</p> <ul style="list-style-type: none"> <li>▪ Each judge will get 2 bottles, and there are 4 judges, and <math>4 \times 2 = 8</math>, so the judges will need a total of 8 bottles each day.</li> <li>▪ To find the number of bottles needed for one day, I need to add <math>468 + 21 + 8 = 497</math>.</li> <li>▪ The track meet lasts 3 days. To find the total number of bottles I need to multiply <math>497 \times 3</math> which is 1,491 total bottles.</li> </ul> <p>Greg needs to provide 1,491 bottles of water. There are 24 bottles in each case, so I need to divide. Since <math>1,491 \div 24 = 62</math> remainder 3, Greg needs to provide a minimum of 63 cases of water to have 1,491 bottles in all.</p>
<b>2</b>	Student response includes 2 of the 3 elements. Or, the student has a computation error, but gives valid explanations or work shows a valid process.
<b>1</b>	Student response includes 1 of the 3 elements.
<b>0</b>	Student response is incorrect.

Unit 3 #3 Rubric	
Score	Description
<b>3</b>	<p>Student response includes each of the following 3 elements.</p> <ul style="list-style-type: none"> <li>• Computation: Number cartons: 44, 176, 44; 3256</li> <li>• Modeling component: Correct work or explanation shown for determining the number of cartons of each size needed.</li> <li>• Modeling component: Correct work or explanation shown for determining the total number of eggs needed to fill the 264 cartons.</li> </ul> <p>Sample Student Response:</p> <p>There are <math>264 \times \frac{1}{6} = \frac{264}{6} = 44</math> cartons that hold 8 eggs. There are <math>264 \times \frac{2}{3} = \frac{528}{3} = 176</math> cartons that hold 12 eggs. There are <math>264 - 44 - 176 = 44</math> cartons that hold 18 eggs. The total number of eggs needed to fill all 264 cartons is <math>44 \times 8 + 176 \times 12 + 44 \times 18 = 3,256</math>.</p>
<b>2</b>	Student response includes 2 of the 3 elements. Or, the student has a computation error, but provides a complete and valid explanation or process.

<b>1</b>	Student response includes 1 of the 3 elements.
<b>0</b>	Student response is incorrect or irrelevant.

### Unit 3 #6 Rubric

Score	Description
<b>4</b>	<p>Student response contains the following 4 elements.</p> <ul style="list-style-type: none"> <li>• Computation component: Correct numbers for each letter in the model</li> <li>• Reasoning component: Valid explanation for finding the numbers in the model</li> <li>• Computation Component: Correct value for quotient, 873 remainder 2</li> <li>• Reasoning component: Valid explanation or work to show multiplication check</li> </ul> <p>Sample Student Response:</p> <p>The value of <math>M</math> is 6,400 because <math>8 \times 800 = 6,400</math>. The value of <math>N</math> is 70 because <math>8 \times 70 = 560</math>. Then <math>6,400 + 560 = 6,960</math>. So there are 26 left. Since <math>8 \times 3 = 24</math>, the value of <math>P</math> is 3 and the value of <math>Q</math> is 24. There are 2 left over, so <math>R</math> is 2.</p> <p>The value of <math>6,986 \div 8</math> is 873 with remainder 2.</p> <p>To check by multiplication, first multiply 873 by 8. Then add 2 to the product.</p> $873 \times 8 = 6,984$ $6,984 + 2 = 6,986$
<b>3</b>	Student response includes 3 of the 4 elements. If a student has a computation error, points can still be awarded for correct reasoning.
<b>2</b>	Student response includes 2 of the 4 elements. If a student has a computation error, points can still be awarded for correct reasoning.
<b>1</b>	Student response includes 1 of the 4 elements. If a student has a computation error, points can still be awarded for correct reasoning.
<b>0</b>	Student response is incorrect or irrelevant.

### Unit 4 #6 Rubric Part A

Score	Description
<b>2</b>	<p>Student response includes each of the following 2 elements.</p> <ul style="list-style-type: none"> <li>• Computation component: The student provides the inequalities</li> </ul>



	<p>"<math>\frac{3}{8} &lt; \frac{1}{2}</math>" AND "<math>\frac{5}{8} &gt; \frac{1}{2}</math>" OR other inequalities that are equivalent to these.</p> <ul style="list-style-type: none"> <li>Reasoning component: The student explains that Nick's reasoning is not correct as he should have found a common denominator to compare <math>\frac{1}{2}</math> to <math>\frac{3}{8}</math> and <math>\frac{1}{2}</math> to <math>\frac{5}{8}</math>. For example: "To compare the fractions, Nick should have changed <math>\frac{1}{2}</math> to <math>\frac{4}{8}</math>."</li> </ul> <p>Notes:</p> <ul style="list-style-type: none"> <li>A variety of explanations are valid. As long as it is clear that the student understands that only comparing the sizes of the numerators doesn't work when the denominators are different, credit should be awarded.</li> <li>The student does not need to use the terms <i>denominator</i> or <i>numerator</i> as long as the explanation is clear as to which portion of the fraction the student is referencing.</li> </ul>
<b>1</b>	Student response includes 1 of the 2 elements.
<b>0</b>	Student response is incorrect or irrelevant.
<b>Unit 4 #6 Rubric Part B</b>	
<b>Score</b>	<b>Description</b>
<b>2</b>	<p>Student response includes each of the following 2 elements.</p> <ul style="list-style-type: none"> <li>Computation component: The student indicates that the difference between the distances jumped by the two crickets is <math>1\frac{3}{4}</math> feet</li> <li>Reasoning component: The student explains why Nick's reasoning is incorrect. For example, "Nick was supposed to subtract <math>\frac{3}{4}</math> from <math>\frac{2}{4}</math> which means he needed to change the numbers to <math>\frac{7}{4}</math> and <math>\frac{14}{4}</math> to be able to do that.</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>The student explains that Nick could use the relationship between addition and subtraction, such as, "Since addition is the opposite of subtraction, he can count up from <math>1\frac{3}{4}</math> to get to <math>3\frac{2}{4}</math> by counting up by fourths."</li> </ul>
<b>1</b>	Student response includes 1 of the 2 elements.
<b>0</b>	Student response is incorrect or irrelevant.

Unit 4 #9 Rubric

Score	Description
<b>3</b>	<p>Student response contains the following 3 elements.</p> <ul style="list-style-type: none"> <li>• Computation component: Correct volume of the prism, 60 cubic units</li> <li>• Reasoning component: Valid explanation to support the volume of the prism</li> <li>• Reasoning component: Provides new dimensions and a valid explanation of how the new dimensions were determined</li> </ul> <p>Sample Student Response:</p> <p>The volume of the prism is 60 cubic units because <math>4 \times 5 \times 3 = 60</math>.</p> <p>The dimensions of a new right rectangular prism that has 20 fewer unit cubes than the original prism could be 4 units wide by 5 units tall by 2 units deep. I determined these dimensions by recognizing that each layer of the original prism that is 4 units wide by 5 units tall by 1 unit deep has a volume of 20 cubic units. So I took one of these layers away from the original prism.</p> <p>(Or other valid explanation.)</p>
<b>2</b>	Student response contains 2 of the 3 elements.
<b>1</b>	Student response contains 1 of the 3 elements.
<b>0</b>	Student response is incorrect or irrelevant.