

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.

Item Number	Answer Key	Evidence Statement Key
1.	1.07	7.RP.2b
2.	D	7.RP.2c
3.	24	7.RP.2b
4.	A, D, E	7.EE.1
5.	C	7.NS.1c-1
6.	D	7.NS.2b-2
7.	D	7.RP.1
8.	C	7.RP.2a
9.	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">           Numeric Expression: <math>14(100) + 6(-30)</math>            Total number of points the player earned: 1220         </div> NOTE: or equivalent expression	7.EE.3
10.	Part A: <div style="text-align: center; margin: 10px 0;"> <span style="border: 1px solid black; padding: 2px 10px;">3</span> <i>g</i> <span style="border: 1px solid black; padding: 2px 10px;">+</span> <span style="border: 1px solid black; padding: 2px 10px;">2.50</span> = <span style="border: 1px solid black; padding: 2px 10px;">13.75</span> </div> Part B: 3.75	7.EE.4a-1

11.	See rubric	7.D.1
12.	See rubric	7.C.5
13.	See rubric	7.C.5
14.	See rubric	7.C.6.1
15.	Part A: See rubric Part B: See rubric Part C: See rubric Part D: See rubric	7.D.2
16.	Part A: See rubric Part B: See rubric	7.C.8
17.	See rubric	7.D.4

## #11 Rubric

Score	Description
<b>3</b>	<p>Student response includes the following 3 elements.</p> <ul style="list-style-type: none"> <li>• <b>Computation component</b> = 1 point                             <ul style="list-style-type: none"> <li>○ Correctly calculates how much money was earned on Monday: \$158</li> </ul> </li> <li>• <b>Modeling component</b> = 2 points                             <ul style="list-style-type: none"> <li>○ Correctly models a process for determining the total number of hours worked</li> </ul> <p style="margin-left: 20px;">Note: It is not necessary to show the total hours of 9.25 if the two correct subtotals are given.</p> <ul style="list-style-type: none"> <li>○ Correctly models a process for determining the total dollar amount earned, including overtime</li> </ul> </li> </ul> <p>Sample Student Response</p> <p>Rita worked from 8:15 a.m. to 12:45 p.m., or <math>4\frac{1}{2}</math> hours before lunch. She worked from 1:30 p.m. to 6:15 p.m., or <math>4\frac{3}{4}</math> hours after lunch. The total time Rita worked on Monday was <math>4\frac{1}{2} + 4\frac{3}{4} = 9\frac{1}{4}</math> hours.</p> <p>Rita worked <math>1\frac{1}{4}</math> hours beyond 8 hours, so she is paid overtime for that time. Rita is paid \$16 per hour for the first 8 hours she worked and <math>(\\$16)(1\frac{1}{2}) = \\$24</math> per hour for the <math>1\frac{1}{4}</math> overtime hours she worked. The total dollar amount she earned on Monday is <math>\\$16(8) + \\$24(1\frac{1}{4}) = \\$128 + \\$30 = \\$158</math>.</p> <p>Notes:</p> <ul style="list-style-type: none"> <li>○ The student may receive a total of 2 modeling points if the modeling processes are correct but the student makes one or two computational errors resulting in an incorrect answer.</li> <li>○ The student may receive a total of 1 modeling point if the modeling processes are correct but the student makes more than two computational errors resulting in an incorrect answer.</li> </ul>
<b>2</b>	Student response includes 2 of the 3 elements.
<b>1</b>	Student response includes 1 of the 3 elements.
<b>0</b>	Student response is incorrect or irrelevant.

#12 Rubric

Score	Description
3	<p>Student response includes the following 3 elements.</p> <ul style="list-style-type: none"><li>• <b>Computation component</b> = 1 point<ul style="list-style-type: none"><li>○ Correctly determines that each sandwich costs \$5.50</li></ul></li><li>• <b>Reasoning component</b> = 2 points<ul style="list-style-type: none"><li>○ Correctly describes the error Matt made when he solved the equation</li><li>○ Shows the corrected steps for solving the equation</li></ul></li></ul> <p>Sample Student Response</p> <p>“Matt did not correctly use the distributive property when he simplified <math>4(x + 2)</math> and changed it to <math>4x + 2</math>. Both the <math>x</math> and the <math>2</math> should be multiplied by <math>4</math>, so he should have written <math>4x + 8</math>.”</p> $4(x + 2) = 30$ $4x + 8 = 30$ $4x = 22$ $x = 5.50$ <p>Notes:</p> <ul style="list-style-type: none"><li>○ The student must describe the error made and fix the error in order to receive full reasoning credit.</li><li>○ If the student only describes the error made or fixes the error without describing it, student will receive at most 1 reasoning point.</li></ul>
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.

#13 Rubric

Score	Description
3	<p>Student response includes the following 3 elements.</p> <ul style="list-style-type: none"><li>• <b>Computation component</b> = 1 point<ul style="list-style-type: none"><li>○ Correctly determines the value of <math>x</math></li></ul></li><li>• <b>Reasoning component</b> = 2 points<ul style="list-style-type: none"><li>○ Correctly uses an equation to determine the monthly savings goal</li><li>○ Correctly writes a sentence to explain the solution</li></ul></li></ul> <p>Sample Student Response</p> $350 = 12(x + 20)$ $29.\overline{16} = x + 20$ $9.\overline{16} = x$ $\$9.17 \approx x$ <p>The student has to save an additional \$9.17 per month to reach his goal of saving \$350 in 12 months.</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.

#14 Rubric

Score	Description
3	<p>Student response includes the following 3 elements.</p> <ul style="list-style-type: none"><li>• <b>Computation component</b> = 1 point<ul style="list-style-type: none"><li>○ Correctly determines the constant of proportionality as 1.25 or equivalent</li></ul></li><li>• <b>Reasoning component</b> = 2 points<ul style="list-style-type: none"><li>○ Correctly explains why the student’s reasoning is incorrect</li><li>○ Correct work or explanation for calculating the constant of proportionality</li></ul></li></ul> <p>Sample Student Response</p> <p>The student’s reasoning is incorrect because he or she used subtraction between only one quantity to find the constant of proportionality. Since the table is proportional, the ratio between the <math>y</math> and <math>x</math> values will be the same. This will be the constant of proportionality.</p> $y/x = 10/8 = 1.25$ $y/x = 7.5/6 = 1.25$ <p>The constant of proportionality is 1.25.</p> <p>Note: One example of correct work is sufficient for credit.</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.

#15 Part A	
Score	Description
1	<p>Student response includes the following element.</p> <ul style="list-style-type: none"> <li>• <b>Modeling component</b> = 1 point <ul style="list-style-type: none"> <li>○ Machine Scored: Correctly models the equation <math>y = \frac{1}{4}x</math> OR other equivalent equation.</li> </ul> </li> </ul>
0	Student response is incorrect or irrelevant.
#15 Part B	
Score	Description
2	<p>Student response includes the following 2 elements.</p> <ul style="list-style-type: none"> <li>• <b>Computation component</b> = 2 points <ul style="list-style-type: none"> <li>○ Machine Scored: 5/4 in the cell corresponding to 5 oranges</li> <li>○ Machine Scored: 24 in the cell corresponding to 6 cups of juice</li> </ul> </li> </ul>
1	Student response includes 1 of the 2 elements.
0	Student response is incorrect or irrelevant.
#15 Part C	
Score	Description
1	<p>Student response includes the following 2 elements.</p> <ul style="list-style-type: none"> <li>• <b>Modeling component</b> = 1 point <ul style="list-style-type: none"> <li>○ Correctly models a strategy to find the unknown number of cups of orange juice in the table</li> <li>○ Correctly models a strategy to find the unknown number of oranges in the table</li> </ul> </li> </ul> <p>Note: The same explanation can be used for both parts. The general explanation of each orange being equal to <math>\frac{1}{4}</math> cup is an accurate strategy for determining both unknown numbers in the table.</p> <p>Sample Student Response:</p>

	<p>Using my equation, <math>y = \frac{1}{4} x</math>, when <math>x = 5</math> oranges, <math>y = 5/4</math> cups of orange juice.</p> <p>The equation indicates that 4 oranges are squeezed to make 1 cup of juice. To make 6 cups of orange juice, <math>6(4) = 24</math> oranges are squeezed.</p>
<b>0</b>	Student response is incorrect or irrelevant.
#15 Part D	
<b>Score</b>	<b>Description</b>
<b>2</b>	<p>Student response includes the following 2 elements.</p> <ul style="list-style-type: none"> <li>• <b>Computation component</b> = 1 point <ul style="list-style-type: none"> <li>○ Correctly calculates the number of bags of oranges needed: 4 bags</li> </ul> </li> <li>• <b>Modeling component</b> = 1 point <ul style="list-style-type: none"> <li>○ Correctly models a strategy to determine the number of bags of oranges needed</li> </ul> </li> </ul> <p>Note: In general, there are three main necessary components for showing a complete strategy: providing the number of cups needed to produce a half gallon [8], the number of oranges needed to produce 8 cups [32], and showing understanding that partial bags cannot be purchased.</p> <p>Sample Student Response:</p> <p>In <math>\frac{1}{2}</math> gallon, there are 2 quarts, or 4 pints, or 8 cups.</p> <p>To make 1 cup of juice, 4 oranges are needed.  So, a total of <math>8(4) = 32</math> oranges are needed to make <math>\frac{1}{2}</math> gallon of juice.  Each bag contains 10 oranges. When I divide 32 by 10, I get a quotient of 3 and a remainder of 2.  This means that Abby needs 4 bags because 3 bags will only contain 30 oranges. She needs the fourth bag to have enough oranges.</p>
<b>1</b>	Student response includes 1 of the 2 elements.
<b>0</b>	Student response is incorrect or irrelevant.



## #16 Part A

Score	Description
2	<p>Student response includes the following 2 elements.</p> <ul style="list-style-type: none"> <li>• <b>Computation component</b> = 1 point <ul style="list-style-type: none"> <li>○ Correct computation, numerical support, or graphical support that is consistent with the student's reasoning</li> </ul> </li> <li>• <b>Reasoning component</b> = 1 point <ul style="list-style-type: none"> <li>○ Correctly reasons that the lengths of the sides of the quadrilateral <math>JKLM</math> are not all the same, so it cannot be a square</li> </ul> </li> </ul> <p>Sample Student Response:</p> <p>In a square, the lengths of all four sides are the same. If quadrilateral <math>JKLM</math> is a square, all four of its side lengths would be the same. Since the <math>y</math>-coordinates are the same in points <math>J</math> and <math>K</math>, the side length of <math>JK</math> is the positive difference between the <math>x</math>-coordinates of each point. So, <math>JK =  -4.5 - (-1.2)  =  -4.5 + 1.2  =  -3.3  = 3.3</math> units. Similarly, the side length of <math>KL</math> is the positive difference between the <math>y</math>-coordinates of each point. So, <math>KL =  3 - 8.7  =  -5.7  = 5.7</math> units. The lengths of two sides of the quadrilateral are not equal, so quadrilateral <math>JKLM</math> is not a square.</p> <p>Notes:</p> <ul style="list-style-type: none"> <li>○ The student may still receive credit for this part if the student chooses to compute or compare side lengths without using absolute values.</li> <li>○ The student may receive a total of 1 point for Part A if the reasoning processes are correct but the student makes one or more computational errors resulting in incorrect answers or an incorrect conclusion.</li> <li>○ Student may receive the 1 computation point if the correct answer is computed but shows no work or insufficient work to indicate a correct reasoning process.</li> </ul>
1	Student response includes 1 of the 2 elements.
0	Student response is incorrect or irrelevant.

#16 Part B

Score	Description
2	<p>Student response includes the following 2 elements.</p> <ul style="list-style-type: none"> <li>○ <b>Computation component</b> = 1 point               <ul style="list-style-type: none"> <li>○ Correct new coordinates for points <math>L</math> and <math>M</math></li> </ul> </li> <li>○ <b>Reasoning component</b> = 1 point               <ul style="list-style-type: none"> <li>○ Correctly reasons why the two new coordinates of points <math>L</math> and <math>M</math> would make quadrilateral JKLM a square</li> </ul> </li> </ul> <p>Note: Numerical or graphical support that is consistent with the student’s reasoning is acceptable for full credit.</p> <p>Sample Student Response:</p> <p>The given coordinates form a rectangle with sides <math>JK</math> and <math>LM</math> both 3.3 units and sides <math>KL</math> and <math>JM</math> both 5.7 units. If the coordinates of points <math>L</math> and <math>M</math> change so that quadrilateral <math>JKLM</math> is a square, they should be lowered on the coordinate plane <math>5.7 - 3.3</math>, or 2.4 units. This will change sides <math>KL</math> and <math>JM</math> from 5.7 units to 3.3 units, making the resulting quadrilateral a square. Lowering points on a coordinate plane changes their <math>y</math>-coordinates. So, the new coordinates of point <math>L</math> would be <math>(-1.2, 6.3)</math> since <math>8.7 - 2.4</math>, or 6.3. The new coordinates of point <math>M</math> would be <math>(-4.5, 6.3)</math> since <math>8.7 - 2.4</math>, or 6.3 units.</p> <p>Notes:</p> <ul style="list-style-type: none"> <li>○ The student should receive credit for this part if the student chooses new coordinates for points <math>L</math> and <math>M</math> that are below points <math>J</math> and <math>K</math>, as long as the student shows or explains that the side lengths of all four sides are the same length.</li> <li>○ The student may receive a total of 1 point for Part B if the reasoning processes are correct but the student makes one or more computational errors resulting in incorrect answers or an incorrect conclusion.</li> <li>○ The student may receive the 1 computation point if the correct answer is computed but shows no work or insufficient work to indicate a correct reasoning process.</li> </ul>
1	Student response includes 1 of the 2 elements.
0	Student response is incorrect or irrelevant.

#17 Rubric

Score	Description
3	<p>Student response includes the following 3 elements.</p> <ul style="list-style-type: none"><li>• <b>Computation component</b> = 1 point<ul style="list-style-type: none"><li>○ The student correctly determines the approximate number of people who will receive a small prize. Accept a range from 900 to 1,200 people.</li></ul></li><li>• <b>Modeling component</b> = 2 points<ul style="list-style-type: none"><li>○ The student correctly models a valid estimation strategy for determining the number of people who will attend this year's fair. Accept a range of 14,000 to 17,000.</li><li>○ The student correctly models finding the approximate number of people who will receive a prize.</li></ul></li></ul> <p>Sample Student Response</p> <p>I saw that the attendance was increasing each year and found the average amount that it increased by each year. <math>(1,087 + 1,763 + 1,176)/3 = 4,026/3</math> So I estimate that the attendance this year will increase by about 1,342 people and will be 14,646 people.</p> <p>20% of 14,646 is <math>0.20(14,468) = 2,929.2</math></p> <p>1/3 of 2,929.2 is <math>(2,929.2) (1/3) = (2929.2)/3 = 976.4</math></p> <p>So about 976 people will receive a small prize.</p> <p>Note: Accept other valid estimation strategies for determining this year's attendance.</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.