SELECTED RESPONSE
Select the correct answer.

1. A snow blower requires a fuel mixture ratio of 40:1 (gas to oil). Which expression represents this ratio?
   - A \( \frac{40}{1} \)
   - B 1 40
   - C 40 1
   - D 1 \( \frac{40}{1} \)

2. A rectangular yard is 10 feet long by 7 feet wide. What is the ratio of the width of the yard to the perimeter of the yard?
   - A 7 to 17
   - B 7 to 34
   - C 17 to 34
   - D 34 to 7

3. Steve earns $8 per hour. His older brother earns $2 more per hour than Steve. What is the ratio of the money Steve earns in an hour to the money his brother earns in an hour?
   - A $8 to $2
   - B $2 to $8
   - C $10 to $8
   - D $8 to $10

4. A man mixed 2 teaspoons of sugar into his large coffee but then added one more teaspoon of sugar because it was not sweet enough. What is the ratio of teaspoons of sugar to one large coffee?
   - A 3:1
   - B 2:1
   - C 1:3
   - D 1:2

Select all correct answers.

5. A punch bowl contained 2 liters of ginger ale, 1 liter of orange juice, and 1 liter of raspberry juice. Select all the true statements.
   - A The ratio of the ginger ale to the entire punch bowl is 1 to 4.
   - B The ratio of orange juice to ginger ale is 2 to 1.
   - C The ratio of the juices to the ginger ale is 2 to 2.
   - D The ratio of the entire punch bowl to the juices is 2 to 4.
   - E The ratio of the orange juice to the raspberry juice is 1 to 1.

6. A restaurant worker was told to make every ham sandwich with 2 tomato slices and 3 pickle slices. Select all true statements.
   - A A worker makes three ham sandwiches. Taken together, the sandwiches will have a ratio of total number of tomato slices to total number of pickle slices of 6:9.
   - B For every ham sandwich, the ratio of tomato slices to pickle slices is 3:2.
   - C A worker makes five sandwiches. The ratio of total number of tomato slices to total number of pickle slices is 7:8.
   - D On every ham sandwich, the ratio of tomato slices to pickle slices is 2:3.
   - E Once a ham sandwich is made, there will be a ratio of 2 tomato slices to 1 ham sandwich.

CONSTRUCTED RESPONSE

7. In Ken’s meatball recipe, for every 5 cups of bread crumbs, 9 pounds of ground beef are used. Write this ratio using a fraction. Label the numbers in the fraction.
8. For every pizza Eric’s family ate, Eric ate 2 of the 8 pieces. If Eric’s family bought 2 pizzas write the ratio of the total number of pieces Eric ate to the total number of pieces the family ate.

9. A middle school has the fifth and sixth grades. There are 100 fifth grade boys and 110 fifth grade girls. There are 7 fewer sixth grade boys than fifth grade boys and there are 10 more sixth grade girls than sixth grade boys What is the ratio of girls to boys in the middle school? Show your work.

10. A particular school has a teacher to student ratio of 1 teacher to 11 students.
   a. Express the teacher to student ratio using the symbol “:”.
   b. Express the teacher to student ratio as a fraction.
   c. Are there more teachers or students? Explain how you know.

11. On a package of rice, the directions say that the ratio of cups of water to cups of uncooked rice should be 1: \( \frac{1}{2} \).
   a. What is the total number of cups of ingredients needed if you want to cook \( \frac{1}{2} \) cup of uncooked rice?
   b. Susan says that the ratio of cups of water to total cups of ingredients is 1:2 because there is twice as much water as there is rice. Is this the correct ratio? Explain why or why not, and if not, give the correct ratio.

12. At the end of the season, Erica’s basketball team has a win-to-loss ratio of 3:2.
   a. What is the ratio of wins to games played?
   b. Can you use the ratio you found in part a to conclude that the total number of games Erica’s team played in one season is 5? Explain why or why not.
6.RP.2

SELECTED RESPONSE
Select the correct answer.

1. A 5-pound bag of cat food costs $11.25. What is the unit price of the cat food in dollars per pound?
   - [A] $0.44 per pound
   - [B] $2.25 per pound
   - [C] $6.25 per pound
   - [D] $56.25 per pound

2. Three pounds of fish costs $14.97 at the market. What is the unit price of the fish in dollars per pound?
   - [A] $4.99
   - [B] $11.97
   - [C] $14.97
   - [D] $44.91

3. Bill drove 315 miles in 7 hours, Alisha drove 235 miles in 5 hours, and Joanne drove 414 miles in 9 hours. Which person drove at an average speed of 47 miles per hour?
   - [A] Alisha
   - [B] Joanne
   - [C] Bill
   - [D] Both Joanne and Bill

Select all correct answers.

4. For each store, calculate the unit price per ounce of potato chips. Which stores sell potato chips at a unit rate of $0.17 per ounce?

<table>
<thead>
<tr>
<th>Potato Chip Prices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Store</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>A</td>
</tr>
<tr>
<td>B</td>
</tr>
<tr>
<td>C</td>
</tr>
<tr>
<td>D</td>
</tr>
<tr>
<td>E</td>
</tr>
</tbody>
</table>

   - [A] Store A
   - [B] Store B
   - [C] Store C
   - [D] Store D
   - [E] Store E

5. Which of the rates shown here correspond to a unit rate of $6 per sandwich?
   - [A] Spending $42 to buy 7 sandwiches
   - [B] Spending $108 to buy 18 sandwiches
   - [C] Spending $40 to buy 5 sandwiches
   - [D] Spending $100 to buy 16 sandwiches
   - [E] Spending $42 to buy 6 sandwiches

Match each quantity with the correct unit rate.

6. A 30-ounce bottle of fruit juice costs $4.80.
   - [A] $0.15 per ounce
   - [B] $0.16 per ounce
   - [C] $0.17 per ounce
   - [D] $0.18 per ounce
   - [E] $0.19 per ounce
   - [F] $0.20 per ounce
   - [G] $0.21 per ounce
   - [H] $0.22 per ounce

7. 16 ounces of ground turkey costs $2.40.


10. A 32-ounce bottle of shampoo costs $5.76 per ounce.
CONSTRUCTED RESPONSE

11. A group of 180 students is divided into 20 teams for a competition.
   a. Write a unit rate that represents the number of students on one team.
   b. Part way through the competition, the students are gathered together and divided into 15 teams. If there are still 180 students in the competition, how many students are on each team now?

12. A deli sells ham for $2.98 per half pound. Kyle incorrectly says that the unit rate is $1.49 per pound. His calculations are shown below. Explain Kyle’s mistake and determine the correct price per pound. Show your work.

\[
\frac{2.98}{\frac{1}{2}} \div \frac{1}{2} = \frac{1.49}{1}
\]

13. A grocery store sells Swiss cheese for $5.90 a pound. To the nearest cent, what is the cost per ounce of Swiss cheese? Round your answer to the nearest cent and show your work.

14. Three wholesalers are having special deals on chicken this week. Wholesaler A is selling 10 pounds of chicken for $40.00, wholesaler B is selling 15 pounds of chicken for $45.00, and wholesaler C is selling 20 pounds of chicken for $50. Which wholesaler has the best price on chicken? Show your work.

15. John and Maria are spending the afternoon hiking in the desert. They purchased six bottles of water for $9.00, two protein bars for lunch for $5.00, and some peanuts for $3.00 as a snack. Suppose they start hiking at 11:30 A.M. and finish the hike at 3:45 P.M. What is the unit rate of money spent to hours hiked? Show your work.
6.RP.3a

SELECTED RESPONSE
Select the correct answer.

1. Steel alloys are formed by mixing certain ratios of iron, carbon, and possible other elements. The table shows the amount of carbon required to make certain amounts of a particular alloy. Find the missing value for the table.

<table>
<thead>
<tr>
<th>Steel (kg)</th>
<th>Carbon (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>250</td>
</tr>
<tr>
<td>60</td>
<td>300</td>
</tr>
<tr>
<td>70</td>
<td>400</td>
</tr>
<tr>
<td>80</td>
<td></td>
</tr>
</tbody>
</table>

A) 350 g  
B) 280 g  
C) 420 g  
D) 175 g

2. A certain paint color is obtained by mixing the correct ratio of red and blue paints. Every time a batch is made, the mixer records the amounts of each color used. One of the batches in the table below was made incorrectly. Which batch should be rejected?

<table>
<thead>
<tr>
<th>Batch</th>
<th>Red (gal)</th>
<th>Blue (gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td>12</td>
</tr>
</tbody>
</table>

A) Batch 1  
B) Batch 2  
C) Batch 3  
D) Batch 4

3. A cyclist was traveling at a constant speed for 8 hours. The table below shows the distances traveled after various times. At the end of the trip, the cyclist’s odometer read 96 miles. Which answer could be the missing row of the table?

<table>
<thead>
<tr>
<th>Time (hr)</th>
<th>Distance (mi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>24</td>
</tr>
<tr>
<td>3</td>
<td>36</td>
</tr>
<tr>
<td>4</td>
<td>48</td>
</tr>
<tr>
<td>5</td>
<td>60</td>
</tr>
<tr>
<td>7</td>
<td>84</td>
</tr>
<tr>
<td>8</td>
<td>96</td>
</tr>
</tbody>
</table>

A) (6, 70)  
B) (6, 74)  
C) (6.5, 78)  
D) (6.5, 80)

4. A student was interested in purchasing notebooks in bulk to get ready for school. Three stores were offering packages of the kind of notebook the student wanted. The table below shows the offers from each store. Order the stores from the best deal to the worst deal for the notebooks.

<table>
<thead>
<tr>
<th>Store</th>
<th>Cost</th>
<th>Notebooks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>$16.00</td>
<td>10</td>
</tr>
<tr>
<td>B</td>
<td>$18.00</td>
<td>12</td>
</tr>
<tr>
<td>C</td>
<td>$27.00</td>
<td>15</td>
</tr>
</tbody>
</table>

A) Store B, Store A, Store C  
B) Store A, Store B, Store C  
C) Store B, Store C, Store A  
D) Store C, Store A, Store B
Select all correct answers.

5. A music store charges for lessons according to the table below. If the store charges a constant rate of dollars to time, which of the following could fill the empty row?

<table>
<thead>
<tr>
<th>Time (min)</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>$24</td>
</tr>
<tr>
<td>40</td>
<td>$32</td>
</tr>
<tr>
<td>45</td>
<td>$36</td>
</tr>
</tbody>
</table>

a. 50 minutes for $40  ○ Yes ○ No
b. 60 minutes for $42  ○ Yes ○ No
c. 70 minutes for $56  ○ Yes ○ No
d. 90 minutes for $72  ○ Yes ○ No

CONSTRUCTED RESPONSE

6. An airport mixes an additive into its jet fuel. The ratio of fuel to additive needs to be kept the same. Complete the table below for the amount of additive required for different amounts of fuel.

| Fuel (kg) | 63 | 84 | 98 |
| Add. (g)  | 30 | 42 | 48 |

7. An engineer is investigating three engines for fuel efficiency. The table below shows the results of the tests for the three engines. Which option gives the best fuel efficiency? Why?

<table>
<thead>
<tr>
<th>Option</th>
<th>Fuel (gal)</th>
<th>Range (mi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>24</td>
<td>528</td>
</tr>
<tr>
<td>B</td>
<td>30</td>
<td>690</td>
</tr>
<tr>
<td>C</td>
<td>42</td>
<td>840</td>
</tr>
</tbody>
</table>

8. A plane was traveling at a constant speed and went 3200 miles in 8 hours. Make a table of four pairs of distance and time. Then use your table to create a graph of distance versus time.

<table>
<thead>
<tr>
<th>Distance (mi)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Time (hr)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


9. A car is being tested for reliability on a track by driving at a constant speed. The car has traveled 150 miles in 3 hours.

a. Complete the table below.

<table>
<thead>
<tr>
<th>Distance (mi)</th>
<th>150</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Time (hr)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

b. If the car breaks down 4.5 hours into the test and has to stop for a repair before continuing, what ratio(s) of distance to time would be affected?

_________________________________________________________________________________

_________________________________________________________________________________

_________________________________________________________________________________

_________________________________________________________________________________

_________________________________________________________________________________

_________________________________________________________________________________

c. How would you expect the ratio to change? Explain your reasoning.

_________________________________________________________________________________

_________________________________________________________________________________

_________________________________________________________________________________

_________________________________________________________________________________

_________________________________________________________________________________
SELECTED RESPONSE
Select the correct answer.

1. If 4 gallons of milk cost $16.76, how much would 7 gallons of milk cost?
   A) $4.19  
   B) $29.33  
   C) $67.04  
   D) $117.32

2. John drives to the beach, which is 270 miles away. In 2 hours, he drives 120 miles. If he continues at that speed, how long will it take him to get to the beach?
   A) 2 hours  
   B) 2.5 hours  
   C) 4 hours  
   D) 4.5 hours

3. The yard care staff can mow 45 lawns in a 10-hour work day. Each of the 9 workers can mow the same number of lawns per hour. How many lawns can one worker mow per hour?
   A) 0.5 lawn per hour  
   B) 0.9 lawn per hour  
   C) 4.5 lawns per hour  
   D) 5 lawns per hour

4. A car travels 304 miles on 16 gallons of gas. How far can the car go on 5 gallons?
   A) 3.2 miles  
   B) 60.8 miles  
   C) 80 miles  
   D) 95 miles

5. The last time Robert filled up his car with gas, he paid $24.50 for 7 gallons. This time, he needs 15 gallons. If the price is the same, how much will he pay?
   A) $52.50  
   B) $32.50  
   C) $11.43  
   D) $3.50

CONSTRUCTED RESPONSE

6. A moving company has one large truck for furniture and one small truck for boxes. During one move, it took the large truck 4 hours to travel 180 miles. It took the small truck 3 hours to make the same trip.
   a. Assume both trucks traveled at constant speeds. How fast did each truck travel?

   __________________________   __________________________

   b. The following week, the company was hired for a 225-mile move. If each truck traveled at the same speed it had the previous week, how long did the trip take for each truck?

   __________________________   __________________________   __________________________   __________________________

7. Two shoppers bought meat at a supermarket deli. The first bought 3 pounds of meat for $9.87. The second bought 4 pounds of meat for $16.76. Neither of the shoppers had a coupon or a discount card. Can you tell if both shoppers bought the same kind of meat? Explain why or why not.

   __________________________   __________________________   __________________________   __________________________   __________________________
8. Lupita bought 7 pounds of pretzels at a local wholesaler for $16.80. Her friend Charles bought 5 pounds of pretzels at the supermarket for $12.75. Charles thinks he got the better deal because $12.75 is less than $16.80.

   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________

   b. How much would Charles have spent if he had purchased the same amount of pretzels as Lupita?

   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________

9. Sam is renting one of two cars to go on a 300-mile trip. The first car can travel 75 miles on 5 gallons of gas. The second car can travel 240 miles on 20 gallons of gas. Each car costs the same to rent, and Sam wants to rent the car with the better gas mileage. Sam estimates that he will pay $49.42 for every 14 gallons of gas he has to buy. Which car should Sam rent, and how much money should Sam bring for gas? Explain your reasoning.

   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________

10. A band Martha likes just released a new album. A digital music service is selling the 12-song album for $9.96. The service also allows purchase of individual songs off the album, with 3 songs selling for $1.29 and 9 selling for $0.99. Martha likes all of the $1.29 songs and 6 of the $0.99 songs. She is considering buying just those songs or buying the whole album. What is the better deal in terms of price per song? Show your work.

   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________
6.RP.3c

SELECTED RESPONSE
Select the correct answer.

1. What is 5% of 200?
   A 1
   B 10
   C 40
   D 1,000

2. What is 120% of 50?
   A 2.4
   B 6
   C 60
   D 6,000

3. A 15% tip on a diner bill is $2.55. How much is the bill?
   A $0.17
   B $0.38
   C $17.00
   D $38.25

4. 56.25% of what number is 168.75?
   A 3
   B 94.9219
   C 300
   D 9,492.19

Select all correct answers.

5. Choose all statements that are true.
   A 15% of 15 is 1.
   B 5% of 50 is 10.
   C 10% of 100 is 10.
   D 2% of 100 is 5.
   E 3% of 200 is 6.

Match each library with its total number of books.

   6. 30 books represent 2% of the total books at library 1.
   7. 45 books represent 5% of the total books at library 2.
   8. 60 books represent 1% of the total books at library 3.
   9. 75 books represent 10% of the total books at library 4.
   10. 90 books represent 3% of the total books at library 5.

CONSTRUCTED RESPONSE

11. The state sales tax rate for North Carolina is 4.75%. The state sales tax rate for South Carolina is 6%. Shandra would like to buy a cookbook with a list price of $20.
   a. If Shandra buys this book in North Carolina, how much would she pay for sales tax?

   b. If she buys the same book on a trip to South Carolina, how much more sales tax would she pay compared to North Carolina?
12. a. 1.5% of what number is 60? 15% of what number is 60? 150% of what number is 60?

b. What pattern do you notice in part a?

13. Jane will receive 18% less of her regular pay when she retires. Her regular pay is $500 per week.

a. How much would she receive per week if she retires today?

b. Explain how you can calculate this using $100\% - 18\% = 82\%$.

c. Show why these calculations are equivalent in general. (Hint: Write an expression for finding an amount $A$ minus $n\%$ of $A$. Write another expression for finding $(100 - n)\%$ of $A$, and then use algebra to show that these two expressions are the same.)
6.RP.3d

SELECTED RESPONSE
Select the correct answer.

1. Heather’s desk is 3 feet long. About how long is it in meters? Use 1 foot ≈ 0.305 meter.
   - A 0.00915 meter
   - B 0.9015 meter
   - C 0.915 meters
   - D 9.15 meters

2. A large container at a party holds 9 liters of lemonade. About how many gallons of lemonade does the container hold? Use 1 gallon ≈ 3.79 liters.
   - A 0.4 gallon
   - B 2.4 gallons
   - C 12.8 gallons
   - D 34.1 gallons

3. Joan mails a package that weighs 140 grams. About how many ounces is the package? Use 1 ounce ≈ 28.4 grams.
   - A 0.2 ounce
   - B 4.9 ounces
   - C 168.4 ounces
   - D 403.3 ounces

4. A printing company makes plastic banners 15 feet long by 6 feet wide. An overseas customer wants to know about how many square meters the banner is. Use 1 foot ≈ 0.305 meter.
   - A 8.37 square meters
   - B 27.5 square meters
   - C 90.0 square meters
   - D 900 square meters

Select all correct answers.

5. Choose all measurements that are equivalent to 45 meters.
   - A 450 centimeters
   - B 4,500 centimeters
   - C 0.045 kilometer
   - D 0.45 kilometer
   - E 4,500 millimeters

Select the correct answer for each lettered part.

6. John knows he can safely lift 30 pounds without help. He needs to move the following packages. Can he lift each safely without help? Use the following:
   - 1 pound ≈ 0.454 kilogram
   - 1 ounce ≈ 28.4 grams
   - 1 kilogram = 1,000 grams
   a. 9.08 kilograms
      - ○ Yes ○ No
   b. 9080 grams
      - ○ Yes ○ No
   c. 460 ounces
      - ○ Yes ○ No
   d. 46 kilograms
      - ○ Yes ○ No

CONSTRUCTED RESPONSE

7. A chemist has a beaker with 4 fluid ounces of a solution. The chemist needs 500 milliliters for an experiment. About how many more milliliters does the chemist need? Use 1 fluid ounce ≈ 29.6 milliliters and show your work.

   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________
8. How many square centimeters of paper do you need to wrap the box shown below? Use 1 inch = 2.54 centimeters. Round your final answer to the nearest whole square centimeter. Show your work.

10. Tisha orders a carpet for a room that measures 270 square feet. The salesman says the carpet costs $12.00 per square yard. He explains that since there are 3 square feet for every square yard, Tisha needs 90 square yards of carpeting, which costs $1,080. What error did the salesman make? What should be the actual cost of the carpet?

9. Jorge wants to buy new vinyl flooring for his kitchen. The kitchen floor is 12 feet by 15 feet. How many square yards is the floor? Show your work.

11. A recipe includes the following juices. The measurements are given in milliliters.

   a. Find the amount of each in cups to complete the table. Use 1 fluid ounce ≈ 29.6 milliliters and 1 cup = 8 fluid ounces. Round to the nearest cup as necessary.

   b. One quart of cranberry juice equals 4 cups. How many quarts of cranberry juice are needed for the recipe? If you can only buy whole quarts of juice, will there be cranberry juice left over? Explain.
6.RP.1 Answers

1. A
2. B
3. D
4. A
5. C, E
6. A, D, E
7. 5 cups of bread crumbs
    9 pounds of ground beef

Rubric
1 point for correct ratio

8. 4:16 or 4 to 16 or \( \frac{4}{16} \)

Rubric
1 point for finding the correct quantities;
1 point for the correct ratio

9. The number of boys in fifth grade is 100,
and the number of boys in sixth grade is
100 – 7 = 93, for a total of 100 + 93 = 193
boys in the middle school. The number of
fifth grade girls is 110, and the number of
sixth grade girls is 93 + 10 = 103, for a
total of 110 + 103 = 213 girls. The ratio of
girls to boys in the middle school is
213:193.

Rubric
1 point for correct answer; 2 points for
showing appropriate work

10. a. 1:11
    b. \( \frac{1}{11} \)
    c. There are more students because
there are 11 students for each teacher.

Rubric
a. 1 point
b. 1 point
c. 1 point for correct answer; 1 point for
correct explanation

11. a. \( \frac{1}{2} \) cups of ingredients
    b. No; there is twice as much water for
uncooked rice, but the amount of
water is not twice the total amount of
the ingredients. The ratio of cups of
water to total cups of ingredients
is \( 1:1\frac{1}{2} \).

Rubric
a. 1 point
b. 1 point for knowing that the ratio in b is
not correct; 1 point for giving the
correct ratio

12. a. 3:5
    b. No; the ratio says that Erica wins
3 games for every 5 games played. It
does not tell you the total number of
games played.

Rubric
a. 1 point
b. 1 point for correct answer; 1 point for
appropriate explanation
6.RP.2 Answers

1. B
2. A
3. A
4. D, E
5. A, B
6. B
7. A
8. G
9. E
10. D
11. a. \[
\frac{180 \text{ students}}{20 \text{ teams}} = \frac{9 \text{ students}}{1 \text{ team}}
\]
b. \[
\frac{180 \text{ students}}{15 \text{ teams}} = \frac{12 \text{ students}}{1 \text{ team}}; \text{ there are 12 students on each team.}
\]

Rubric
a. 1 point
b. 1 point

12. Kyle divided the numerator and denominator by 2 to find the unit rate. Kyle should have multiplied by 2 to find the price per pound.

\[
\frac{\$2.98 \cdot 2}{1 \text{ pound} \cdot 2} = \frac{\$5.96}{1 \text{ pound}}
\]
The ham is selling for $5.96 per pound.

Rubric
1 point for identifying the error; 1 point for the correct unit rate; 1 point for showing appropriate work

13. \[
\frac{\$5.90}{1 \text{ pound}} = \frac{\$5.90}{16 \text{ ounces}} \cdot \frac{1 \text{ ounce}}{1 \text{ pound}} = \$0.37
\]

Rubric
1 point for answer;
1 point for appropriate work

14. Wholesaler C has the lowest price per pound.

Wholesaler A:

\[
\frac{\$40.00}{10 \text{ pounds}} = \frac{\$4.00}{1 \text{ pound}}
\]

Wholesaler B:

\[
\frac{\$45.00}{15 \text{ pounds}} = \frac{\$3.00}{1 \text{ pound}}
\]

Wholesaler C:

\[
\frac{\$50.00}{20 \text{ pounds}} = \frac{\$2.50}{1 \text{ pound}}
\]

Rubric
1 point for each computation; 1 point for identifying the wholesaler with the best price

15. John and Maria spent $4.25 per hour for the trip.

John and Maria spent \[ \$9.00 + \$5.00 + \$3.00 = \$17.00 \]
for the trip.

Their trip lasted 4.25 hours because they started at 11:30 A.M. and finished at 3:45 P.M.

The ratio of money spent to time hiked is \[ \frac{\$17.00}{4.25 \text{ hours}} \] and the unit rate is \[ \frac{\$17.00}{4.25 \text{ hours}} = \frac{\$4.00}{1 \text{ hour}} \].

Rubric
1 point for the correct unit rate; 4 points for showing appropriate work
6.RP.3a Answers

1. A
2. C
3. C
4. A
5. a. Yes
   b. No
   c. Yes
   d. Yes
6.

<table>
<thead>
<tr>
<th>Fuel (kg)</th>
<th>63</th>
<th>70</th>
<th>84</th>
<th>98</th>
<th>112</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additive (g)</td>
<td>27</td>
<td>30</td>
<td>36</td>
<td>42</td>
<td>48</td>
</tr>
</tbody>
</table>

Rubric
1 point for each correct value

7. Option B
Option A can travel 22 miles on 1 gallon, Option B can travel 23 miles on 1 gallon, and Option C can travel 20 miles on 1 gallon. The ratio of distance to fuel is highest for Option B.

Rubric
1 point for the correct option; 1 point for a correct explanation

8.

<table>
<thead>
<tr>
<th>Distance (miles)</th>
<th>800</th>
<th>1600</th>
<th>2400</th>
<th>3200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time (hr)</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>8</td>
</tr>
</tbody>
</table>

(Students may switch which quantity goes on which axis for full credit, as long as they apply their decision correctly.)

Rubric
1 point for each correct ordered pair in the table, 2 points for a correct graph

9. a.

<table>
<thead>
<tr>
<th>Distance (mi)</th>
<th>50</th>
<th>100</th>
<th>150</th>
<th>200</th>
<th>250</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time (hr)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

b. The ratio of 250 miles to 5 hours would change.
c. I would expect the ratio to be lower because the car would travel a smaller distance in one hour if it had to stop for repairs.

Rubric
a. 0.5 point for each entry in the table
b. 1 point for noting that the ratio of 250 miles to 5 hours would change
c. 2 points for explaining how the ratio would change and why
6.RP.3b Answers

1. B
2. D
3. A
4. D
5. A

6. a. The small truck traveled at 60 miles per hour, and the large truck traveled at 45 miles per hour.
b. The trip took the small truck 3.75 hours and the large truck 5 hours.

Rubric
a. 0.5 point for each correct speed
b. 0.5 point for each correct time

7. The two shoppers did not buy the same kind of meat; the first shopper paid $3.29 per pound, and the second shopper paid $4.19 per pound.

Rubric
1 point for the correct answer; 2 points for an appropriate explanation

8. a. No; Lupita paid $2.40 per pound for her pretzels. Charles paid $2.55 per pound for his pretzels. Lupita got a better deal because $2.40 per pound is less than $2.55 per pound.

b. $17.85

Rubric
a. 1 point for correct answer; 2 points for explanation
b. 1 point for answer

9. Sam should rent the first car and bring $70.60 for gas.
   The first car gets 15 miles per gallon, while the second car only gets 12 miles per gallon. Sam should choose the first car. Sam’s estimate for how much he will pay for gas indicates a unit rate of $3.53 per gallon. At 15 miles per gallon, Sam will need 20 gallons to make the 300-mile trip. So Sam should bring $70.60 for gas.

Rubric
1 point for the correct car;
1 point for correct amount of money for gas;
3 points for appropriate explanation with necessary calculations

10. If Martha buys all the $1.29 songs and 6 of the $0.99 songs, she will be getting 9 songs for $9.81. She will pay $1.09 per song.

\[
\frac{9.81}{9 	ext{ songs}} = \frac{9.81}{9} = \frac{1.09}{1 	ext{ song}}
\]

If she buys the album, she will be getting 12 songs for $9.99. She will pay $0.83 per song.

\[
\frac{9.96}{12 	ext{ songs}} = \frac{9.96}{12} = \frac{0.83}{1 	ext{ song}}
\]

The whole album is a better deal in terms of price per song.

Rubric:
1 point for the answer;
1 point for the price for just the songs she likes;
1 point for each of the unit rates
6.RP.3c Answers

1. B
2. C
3. C
4. C
5. C, E
6. C
7. B
8. F
9. A
10. E

11. a. $20 \times \frac{4.75}{100} = $0.95
   b. $20 \times \frac{6}{100} = $1.20

   $1.20 - $0.95 = $0.25

   She would pay $0.25 more in sales tax in South Carolina.

Rubric
a. 1 point
b. 2 points

12. a. 4,000; 400; 40
   b. When the percent is multiplied by 10, the resulting whole is divided by 10.
   c. 200; the percent changed from 2.5% to 25% (a multiplication by 10), so the whole, 2,000, will be divided by 10: 2,000 ÷ 10 = 200. So, 25% of 200 is 50.

Rubric
a. 1 point for each correct answer
b. 1 point for the explanation
c. 1 point for the explanation; 1 point for the answer

13. a. $410
   b. Write 82% as a fraction with denominator 100. Then multiply by Jane’s regular pay.

   \[
   \frac{82}{100} \times 500 = 410
   \]

   The answer, $410, is the same as part a.

   c. To find \( n \)% of an amount \( A \):

   \[
   A \times \frac{n}{100} = \frac{nA}{100}
   \]

   Also:

   \[
   \left( \frac{100}{100} \frac{n}{100} \right) A = \frac{100 - n}{100} A = A - \frac{nA}{100}
   \]

   Use the distributive property and simplify.

   Both methods result in the expression

Rubric
a. 1 point
b. 1 point
c. 4 points
6.RP.3d Answers

1. C
2. B
3. B
4. A
5. B, C
6. a. yes
   b. yes
   c. yes
   d. no
7. The chemist has about
   \[ 4 \text{ fl oz} = \frac{29.6 \text{ mL}}{1 \text{ fl oz}} = 118.4 \text{ mL}, \]
   so he or she needs \( 500 \text{ mL} - 118.4 \text{ mL} = 381.6 \text{ mL} \) more.

Rubric
1 point for correct answer; 1 point for appropriate work

8. Find the surface area of the box in square inches.
   \[ 2(6 \text{ in.} \times 6 \text{ in.}) + 2(6 \text{ in.} \times 12 \text{ in.}) + 2(6 \text{ in.} \times 12 \text{ in.}) \]
   \[ = 2(36 \text{ in.}^2) + 2(72 \text{ in.}^2) + 2(72 \text{ in.}^2) \]
   \[ = 72 \text{ in.}^2 + 144 \text{ in.}^2 + 144 \text{ in.}^2 \]
   \[ = 360 \text{ in.}^2 \]
   Convert the surface area to square centimeters. Multiply the surface area by two factors of \( \frac{2.54 \text{ cm}}{1 \text{ inch}} \).
   Find the number of square meters.
   \[ 360 \text{ in.}^2 \times \frac{2.54 \text{ cm}}{1 \text{ in.}} \times \frac{2.54 \text{ cm}}{1 \text{ in.}} = 2,323 \text{ square centimeters} \]

Rubric
1 point for the correct answer; 2 points for appropriate work

9. 12 feet \( \div \frac{1 \text{ yard}}{3 \text{ feet}} = 4 \text{ yards} \);
   15 feet \( \div \frac{1 \text{ yard}}{3 \text{ feet}} = 5 \text{ yards} \);
   Area of floor = 4 yards \( \times \frac{5 \text{ yards}}{20 \text{ square yards}} = 20 \text{ square yards} \)

Rubric
1 point for correct area; 1 point for appropriate work

10. The salesman was in error when he said there were 3 square feet in a square yard.
   Since 1 yard = 3 feet, 1 square yard is
   3 feet \( \times \frac{3 \text{ feet}}{1 \text{ yard}} = 9 \text{ square feet} \).
   The actual number of square yards is
   \[ 270 \text{ square feet} \div \frac{1 \text{ square yard}}{9 \text{ square feet}} \]
   = 30 square yards
   The actual cost is
   \[ 30 \text{ square yards} \times \frac{\$12.00}{1 \text{ square yard}} = \$360. \]

Rubric
2 points for identifying error; 2 points for calculating actual cost

11. a.

<table>
<thead>
<tr>
<th>Juice</th>
<th>Milliliters</th>
<th>Cups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cranberry</td>
<td>3,500</td>
<td>15</td>
</tr>
<tr>
<td>Orange</td>
<td>950</td>
<td>4</td>
</tr>
<tr>
<td>Lemon</td>
<td>240</td>
<td>1</td>
</tr>
</tbody>
</table>

b. 1 quart of cranberry juice holds 4 cups, so 15 cups \( \div \frac{1 \text{ quart}}{4 \text{ cups}} = \frac{3}{4} \) quarts.

Because only whole quarts can be bought, 4 quarts of cranberry juice are needed, and one quarter of a quart (one cup) will be left over.

Rubric
a. 1 point for each missing table value
b. 1 point for number of quarts; 1 point for noting there will be juice left over;
1 point for explanation