1. Which list of numbers is ordered from greatest to least? 1 point
   A. $-2\frac{1}{5}, 2\frac{1}{4}, 2.23, -2$
   B. $2\frac{1}{4}, 2.23, -2, -2\frac{1}{5}$
   C. $-2, -2\frac{1}{5}, 2\frac{1}{4}, 2.23$
   D. $-2\frac{1}{5}, -2, 2.23, 2\frac{1}{4}$

2. Henry is buying orange juice to make punch for a party. He can buy the juice in 32-oz cartons for $2.56 each or 48-oz cartons for $3.36 each. Which is the better value? Explain. 2 points

48-oz carton; Sample answer:
\[
\frac{32}{2.56} = \frac{32}{\frac{64}{10}} = \frac{\frac{320}{10}}{\frac{64}{10}} = \frac{320}{64} = 5
\]

3. Find the following measures of the data set shown in the box plot below. 1 point

   minimum: 1
   maximum: 16
   median: 8
   first quartile: 3
   third quartile: 15
   interquartile range: 12

4. Use the map of the amusement park.

   Part A
   What are the coordinates of the Ferris Wheel? 1 point
   \((-1.5, 0.5)\)

   Part B
   What is located at \((-1.5, -2)\)? 1 point
   Roller Coaster 2

5. For questions 5a–5d, choose Yes or No to tell if the expressions are equivalent. 1 point

   5a. $14d + 21$ and $7(2d + 3)$  
      ○ Yes  ○ No
   5b. $9(5r - 2)$ and $14r - 7$  
      ○ Yes  ○ No
   5c. $8(6q - 9)$ and $48q - 72$  
      ○ Yes  ○ No
   5d. $32t + 16$ and $16(2 - t)$  
      ○ Yes  ○ No
6. A gym charges a one-time fee of $60 to join and membership dues of $25 per month.

**Part A**

Complete the table to show how the total cost in dollars, \(C\), and the number of months, \(m\), of gym membership are related. **1 point**

<table>
<thead>
<tr>
<th>(m)</th>
<th>3</th>
<th>8</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>(C)</td>
<td>$135</td>
<td>$260</td>
<td>$410</td>
</tr>
</tbody>
</table>

**Part B**

Write an equation to represent the total cost based on the number of months of gym membership. **1 point**

*Sample answer:*

\[ C = 60 + 25m \]

7. Which of the following is a statistical question? **1 point**

A. How tall is Mr. Leung?
B. What are the ages of all your cousins?
C. What is the formula for the volume of a cube?
D. What is the school’s address?

8. Solve the equation. **1 point**

\[ x = 0.625 \]

\[ x = 5 \]

9. Rachel is making nachos for a party. The recipe calls for \(\frac{2}{3}\) cup of cheese for each plate of nachos.

**Part A**

How many full plates of nachos can Rachel make with 5 cups of cheese? Explain. **1 point**

*7; Sample answer:*

\[ 5 \div \frac{2}{3} = \frac{5}{1} \times \frac{3}{2} = \frac{15}{2} \]

or \(7\frac{1}{2}\), so she can make 7 full plates of nachos.

**Part B**

How many more cups of cheese would Rachel need to make 9 plates of nachos? Explain. **1 point**

*1 more cup; Sample answer: To make 9 plates, she needs*

\[ 9 \times \frac{2}{3} = \frac{18}{3} \text{ or } 6 \text{ cups}. \]

10. Fill in the boxes to plot the five rational numbers below on the number line. **1 point**

\[-0.5, \frac{3}{2}, 0.75, -\frac{10}{5}, -1.25\]

\[-\frac{10}{5}, -1.25, 0.75\]

\[-2, -1, 0, 1, 2\]

\[-0.5, \frac{3}{2}\]
11. The boiling point of water is 212°F. What is this temperature in degrees Celsius? Use the formula \( C = \frac{5}{9}(F - 32) \), where \( C \) represents the temperature in degrees Celsius and \( F \) represents the temperature in degrees Fahrenheit. **1 point**

\begin{align*}
\text{A} & \quad 0°C \\
\text{B} & \quad 100°C \\
\text{C} & \quad 212°C \\
\text{D} & \quad 324°C
\end{align*}

12. A small theater sold 72 tickets for a play. The ratio of adult tickets to child tickets was 4:1. The ratio of adult tickets to senior tickets was 4:3.

**Part A** **2 points**

Draw a diagram or make a table to represent the types of tickets sold.

**Sample answer:**

| Adult tickets | 9 | 9 | 9 | 9 |
| Senior tickets | 9 | 9 | 9 |
| Child tickets | 9 |

Each box represents \( \frac{72}{8} = 9 \) tickets.

**Part B**

How many of each type of ticket were sold? **1 point**

36 adult, 27 senior, 9 child

13. Draw lines to match the coordinates of each point with the coordinates of its reflection across the x-axis. **1 point**

\begin{align*}
(-2, 7) & \quad \rightarrow \quad (7, -2) \\
(3, 9) & \quad \rightarrow \quad (-3, 9) \\
(7, 2) & \quad \rightarrow \quad (3, -9) \\
(-3, -9) & \quad \rightarrow \quad (-2, -7)
\end{align*}

14. The drama club spent $608 on food for a party for its 38 members. Let \( a \) be the amount spent on food per person.

**Part A** **1 point**

Write an equation to represent how much was spent on food per person.

**Sample answer:**

\[ 38a = 608 \]

**Part B** **1 point**

Solve your equation to find how much the club spent on food per person.

\[ a = 16, \text{ so the club spent } $16 \text{ per person.} \]

15. Complete the Venn diagram to show the common factors of 45 and 75. Then circle the greatest common factor. **2 points**
16. Which of the following expressions have a value of 6? Select all that apply.

- (78 ÷ 3) − 2^4
- (2.3)^2 + 0.71
- −|−6|
- |−6|
- 7^2 − 3.1 − 19 × 2.1

17. Draw lines to match each division expression on the left with its quotient on the right. 1 point

<table>
<thead>
<tr>
<th>Expression</th>
<th>Quotient</th>
</tr>
</thead>
<tbody>
<tr>
<td>494 ÷ 95</td>
<td>5.1</td>
</tr>
<tr>
<td>136.8 ÷ 24</td>
<td>5.2</td>
</tr>
<tr>
<td>96.9 ÷ 19</td>
<td>5.4</td>
</tr>
<tr>
<td>43.2 ÷ 8</td>
<td>5.7</td>
</tr>
</tbody>
</table>

18. What is the area of this trapezoid? 1 point

156 ft^2; Sample answer:
Subtract the area of the two 3 × 12 rectangular corners from the large 12 × 19 rectangle around the polygon.

19. Caroline’s baby sister weighs 3,415 grams. What is her weight in kilograms? 1 point

- A 341.5 kg
- B 34.15 kg
- C 3.415 kg
- D 0.3415 kg

20. Meredith drew the shape shown below.

Find the area of the shape. Explain. 2 points

21. Chang used a coordinate plane to show where his posters are displayed on his bedroom wall. Three posters are located at E(5, 3), F(−4, 3), and G(−4, 5).

Use absolute values of coordinates to find the distances between points E and F, and between points G and F. Show your work. 2 points

\[ EF = |−4| + |5| = 4 + 5 = 9 \text{ units}; \]
\[ GF = |5| − |3| = 5 − 3 = 2 \text{ units} \]
22. Which equation has a graph that includes the point (4.5, 14)? Select all that apply. 1 point

- \( y = 2x + 5 \)
- \( y = 3x + 1.5 \)
- \( y = 4x - 4 \)
- \( y = 5x - 8.5 \)
- \( y = \frac{1}{2}x + 10 \)

23. The table shows the relationship between the number of girls and the number of boys in a middle school chorus. Complete the table. 1 point

<table>
<thead>
<tr>
<th>Chorus Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Girls</td>
</tr>
<tr>
<td>7</td>
</tr>
<tr>
<td>14</td>
</tr>
<tr>
<td>21</td>
</tr>
<tr>
<td>28</td>
</tr>
<tr>
<td>35</td>
</tr>
</tbody>
</table>

24. What is the volume of a rectangular prism with \( l = 4\frac{1}{2} \) cm, \( w = 3\frac{1}{2} \) cm, and \( h = 6 \) cm? 1 point

- A \( 90\frac{1}{2} \) cubic centimeters
- B \( 94\frac{1}{2} \) cubic centimeters
- C \( 95 \) cubic centimeters
- D \( 95\frac{1}{2} \) cubic centimeters

25. Which inequality represents the situation described below?

The distance, \( d \), is less than 200 miles. 1 point

- A \( d \geq 200 \)
- B \( d > 200 \)
- C \( d \leq 200 \)
- D \( d < 200 \)

26. The number of students in each of the classes that Julia is taking and each of the classes that Mason is taking are shown below.

Julia's classes: 25, 23, 28, 32, 27
Mason's classes: 20, 26, 24, 31, 29

Which of the following statements are true? Select all that apply. 1 point

- The mean is greater for Mason's classes than for Julia's classes.
- For both sets of data, the median is equal to the mean.
- The mean absolute deviation (MAD) is greater for Julia’s classes than for Mason’s classes.
- The interquartile range (IQR) is greater for Mason's classes than for Julia's classes.
- The numbers of students in Julia's classes are less spread out than those in Mason's classes.

27. Ms. Wertz graded 20% of the tests for her class in 16 minutes. How many minutes will it take to grade all of the tests? Explain. 2 points

80 minutes; Sample answer: Let \( m = \) the total minutes to grade all the tests. 
\[ 0.2m = 16 \]
Divide 
\[ 16 \div 0.2 \] to find 
\[ m = 80. \]
28. Logan used the net below to design a nylon tent.

![Net Diagram]

**Part A** 1 point
What shape will the tent have?

**Square pyramid**

**Part B**
How much nylon will Logan need to make the tent? Explain. **1 point**

84 ft²; The amount of nylon needed is the surface area, or (6)(6) + 4\(\left(\frac{1}{2} \times 6 \times 4\right) = 84\).

29. Which equation describes the graph? **1 point**

A \(y = x - 2\)  \(\Box\) \(y = 3x - 2\)

B \(y = 2x - 3\)  \(\Box\) \(y = 3x + 2\)

30. The area of the rectangular floor in Tamara’s room is \(95\frac{5}{6}\) square feet. The width of the room is \(8\frac{1}{3}\) feet.

**Part A**
Estimate the length of Tamara’s room. Explain. **1 point**

Sample answer: 12 ft; I rounded \(95\frac{5}{6}\) to 96 and \(8\frac{1}{3}\) to 8, and divided the area by the width.

**Part B** 1 point
Find the exact length of Tamara’s room. Was your estimate an overestimate or an underestimate?

11\(\frac{1}{2}\) ft; Sample answer: Overestimate

**Part C** 1 point
Suppose the ceiling is 12 feet high. If Tamara orders 480 square feet of wallpaper, will she have enough to cover all four walls? Explain.

Yes; 2 walls are \(8\frac{1}{3} \times 12 = 100\) ft² each, and 2 walls are \(11\frac{1}{2} \times 12 = 138\) ft² each. \(2(100) + 2(138) = 476\); 480 > 476.