

1. Which list of numbers is ordered from greatest to least? **1 point**

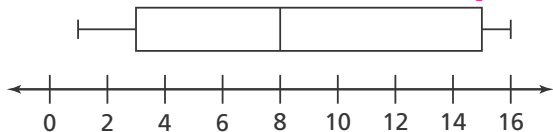
Ⓐ $-2\frac{1}{5}, 2\frac{1}{4}, 2.23, -2$
 Ⓑ $2\frac{1}{4}, 2.23, -2, -2\frac{1}{5}$
 Ⓒ $-2, -2\frac{1}{5}, 2\frac{1}{4}, 2.23$
 Ⓓ $-2\frac{1}{5}, -2, 2.23, 2\frac{1}{4}$

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

$$\begin{aligned} \text{answer: } & \frac{\$2.56}{32 \text{ oz}} \div \frac{32}{32} \\ & = \frac{\$0.08}{1 \text{ oz}}, \frac{\$3.36}{48 \text{ oz}} \div \frac{48}{48} \\ & = \frac{\$0.07}{1 \text{ oz}}; \$0.07 < \$0.08 \end{aligned}$$

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



minimum: **1**

maximum: **16**

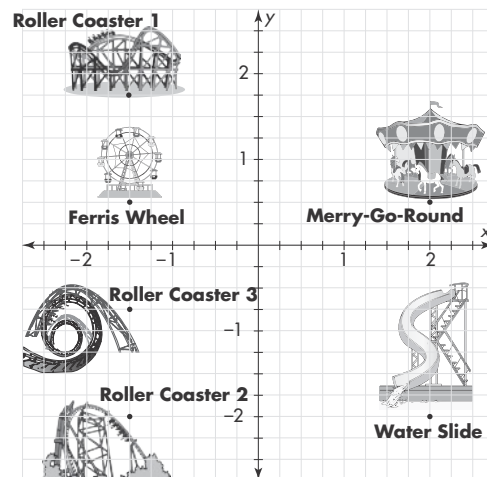
median: **8**

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**

m	3	8	14
C	\$135	\$260	\$410

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**

$$\frac{x}{8} = 0.625$$

$x = 5$

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.

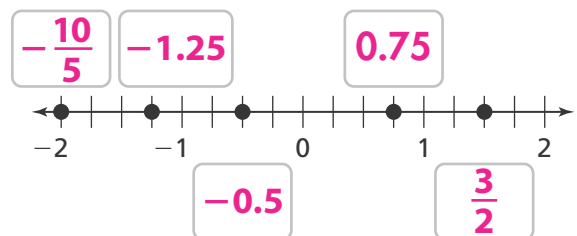
Part B

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
 $9 \times \frac{2}{3} = \frac{18}{3}$ or 6 cups.

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

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



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**

Ⓐ 0°C
 Ⓑ 100°C
 Ⓒ 212°C
 Ⓓ 324°C

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 9999

Senior tickets 999

Child tickets 9

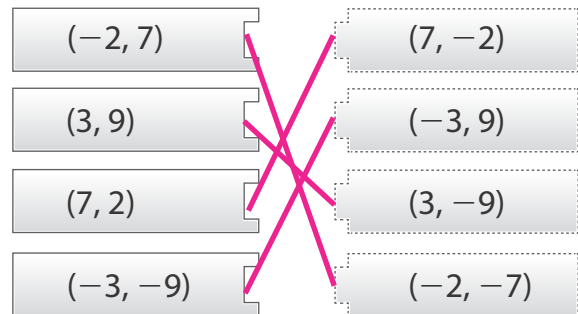
Each box represents
 $72 \div 8 = 9$ tickets.

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**



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.

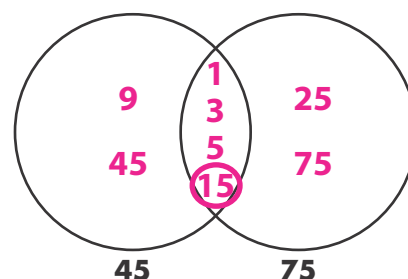
Sample answer:
 $38a = 608$

Part B 1 point

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

**$a = 16$, so the club
 spent \$16 per person.**

15. Complete the Venn diagram to show the common factors of 45 and 75. Then circle the greatest common factor. **2 points**



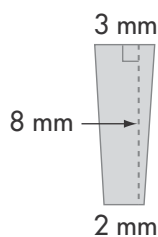
16. Which of the following expressions have a value of 6? Select all that apply. **1 point**

- ☐ $(78 \div 3) - 2^4$
- ☒ $(2.3)^2 + 0.71$
- ☐ $-|-6|$
- ☒ $|-6|$
- ☒ $7^2 - 3.1 - 19 \times 2.1$

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

494 $\div$ 95		5.1
136.8 $\div$ 24		5.2
96.9 $\div$ 19		5.4
43.2 $\div$ 8		5.7

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

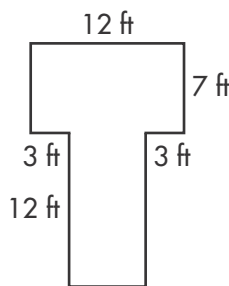


- (A) 8 mm^2 (C) 20 mm^2
- (B) 16 mm^2 (D) 40 mm^2

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

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

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**

Chorus Members

Girls	Boys
7	5
14	10
21	15
28	20
35	25

24. What is the volume of a rectangular prism with $\ell = 4\frac{1}{2}$ 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.

- (A) $d \geq 200$ (C) $d \leq 200$
(B) $d > 200$ (D) $d < 200$ **1 point**

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

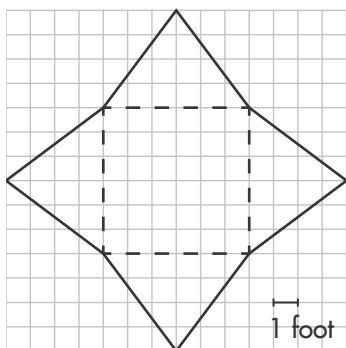
Which of the following statements are true? Select all that apply. **1 point**

- ☐ 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.



Part A 1 point

What shape will the tent have?

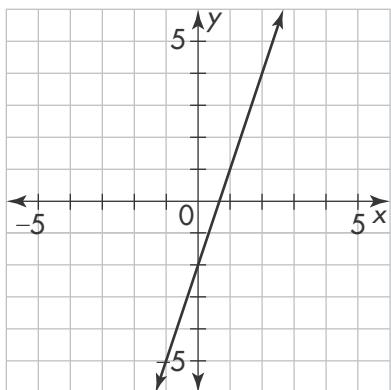
Square pyramid

Part B

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

84 ft^2 ; 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**



- Ⓐ $y = x - 2$ Ⓒ $y = 3x - 2$
 Ⓑ $y = 2x - 3$ Ⓓ $y = 3x + 2$

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