

Spring 2025

GRADE 7
MATHEMATICS

1. Which expressions are equivalent to $-\frac{4}{9}$?

Select **all** the correct answers.

A. $\frac{4}{9}$

B. $\frac{-4}{9}$

C. $-(-\frac{4}{9})$

D. $\frac{4}{-9}$

E. $-(\frac{9}{4})$

2. What is the value of the expression shown?

$$-\frac{1}{2} - (-\frac{1}{2}) - \frac{1}{2}$$

A. $-\frac{3}{2}$

B. $-\frac{1}{2}$

C. $\frac{1}{2}$

D. $\frac{3}{2}$

- 3.** This question has two parts.

Mr. Garces is the science teacher responsible for planning the 7th grade science fair. He must manage the budget for materials and determine the quantity of containers needed for lab kits.

Part A

Mr. Garces has a budget of \$250.00 to purchase lab kits and to rent chairs. A total of 22 lab kits are required at a cost of \$10.50 per kit. The total cost of renting chairs is \$35.00. If the budget is not enough, Mr. Garces will need to request additional money from the science department.

- Will Mr. Garces have enough money to purchase all 22 lab kits and pay for the chair rental?
- If there is enough in the budget, how much money will be left over?
- If there is not enough in the budget, how much additional money must he request from the science department?

Part B

Mr. Garces must store the lab kits in containers until the day of the science fair. Each container holds 3 lab kits. How many containers are needed to store all 22 lab kits?

4. In 1936, North Dakota experienced both its lowest and its highest recorded temperatures to date. The lowest temperature was -60 degrees Fahrenheit. The highest temperature was 121°F .

What is the difference in degrees Fahrenheit between the lowest and highest recorded temperatures?

Enter your answer in the space.

5. Which expressions are equivalent to $3(-4x + 2) + 6x$?

Select **all** the correct answers.

- A. $-6x + 6$
- B. $6x + 6$
- C. $-6(x - 1)$
- D. $6(-x + 1)$
- E. $6(-x - 1)$

- 6.** The equation $d = 65t$ represents the distance in miles, d , a car travels in t hours. What is the constant of proportionality?
- A.** $\frac{1}{56}$ mile per hour
 - B.** $\frac{1}{65}$ mile per hour
 - C.** 56 miles per hour
 - D.** 65 miles per hour
- 7.** Devon is shopping for video games online and comes across a 15% off sale on his favorite gaming website. Which expression could he use to calculate the sale price of a video game that was originally priced at x dollars?
- A.** $0.15 - x$
 - B.** $x - 0.15$
 - C.** $0.85x$
 - D.** $1.15x$

- 8.** The population of Hamilton Township has decreased by a total of 8,000 people over the past 4 years. The decrease in population was about the same each year.

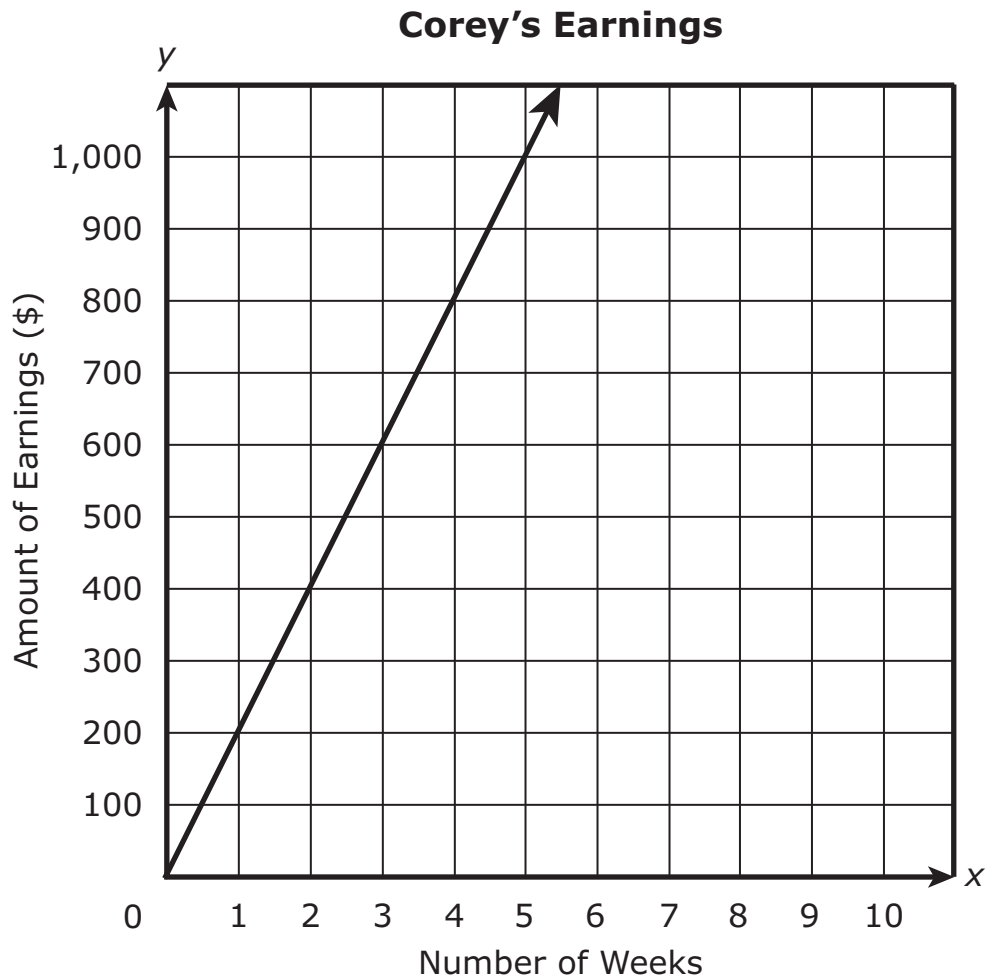
The following equation represents this situation.

$$-8,000 \div 4 = -2,000$$

Which statement explains what $-2,000$ represents?

- A.** There are 2,000 fewer people living in Hamilton Township now than there were 4 years ago.
- B.** The population of Hamilton Township decreased by about 8,000 people per year over the past 4 years.
- C.** The total change in Hamilton Township's population from 4 years ago is $-2,000$.
- D.** The population of Hamilton Township decreased by about 2,000 people per year over the past 4 years.

9. The graph shows the proportional relationship between the number of weeks, x , Corey works at his new job and the amount of money, y , in dollars, that he earns.



Which statements about the points on the graph correctly represent the situation?

Select **all** the correct answers.

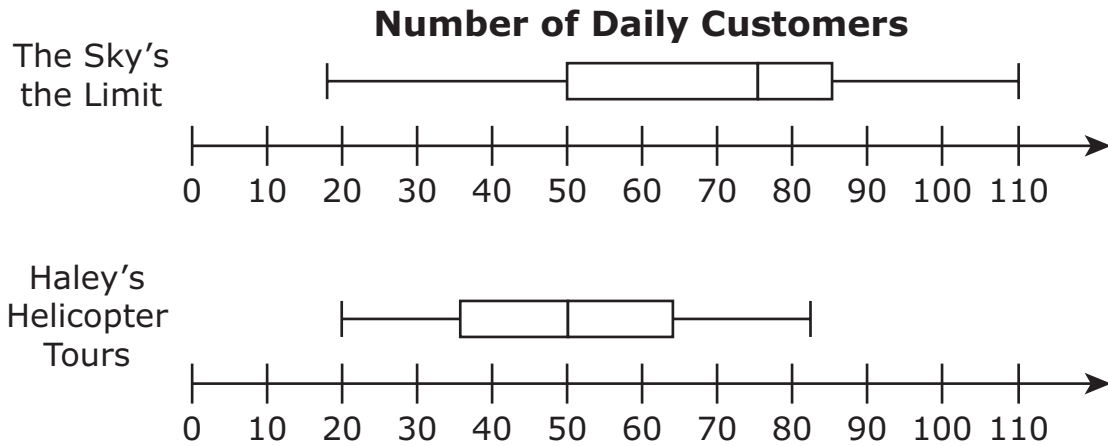
- A.** The point (0,0) means that at 0 weeks, Corey has not earned any money.
- B.** The point (1,100) means that Corey earns \$100 each week.
- C.** The point (1,200) means that Corey earns \$200 each week.
- D.** The point (2,300) means that Corey has earned \$300 after 2 weeks of working.
- E.** The point (4,800) means that Corey has earned \$800 after working for 4 weeks.

- 10.** The perimeter of Yui's zen garden is 32 meters. The length of the garden is 3 times its width.

What is the length, in meters, of Yui's zen garden?

Enter your answer in the box.

- 11.** The box plots represent the numbers of daily customers recorded by each of two helicopter tour companies located at a mountain resort.



Which statement about the data in the box plots is true?

- A.** The number of daily customers for The Sky's the Limit always exceeds the number of daily customers for Haley's Helicopter Tours.
- B.** The number of daily customers for The Sky's the Limit varies more than the number of daily customers for Haley's Helicopter Tours.
- C.** The number of daily customers for Haley's Helicopter Tours varies more than the number of daily customers for The Sky's the Limit.
- D.** The difference between the median numbers of daily customers for The Sky's the Limit and Haley's Helicopter Tours is 30.

- 12.** Mr. Allison earns an annual base salary of \$35,000 plus 8% of his annual sales. If he earned a total of \$41,000 last year, which equation could be used to determine a , the amount of Mr. Allison's annual sales?

A. $35,000 + 0.08a = 41,000$

B. $35,000 + 8a = 41,000$

C. $8 + a = 41,000$

D. $0.08a = 41,000$

- 13.** A park, a school, a library, and a post office are all on the same road, which runs north and south. The park is $2\frac{1}{2}$ miles north of the school. The library is $2\frac{1}{2}$ miles south of the school. The post office is $3\frac{1}{4}$ miles south of the school.

- Describe the locations of the park, the school, the library, and the post office on a vertical number line.
- What is the distance from the park to the library, in miles? Explain your reasoning.
- What is the distance from the park to the post office, in miles? Explain your reasoning.

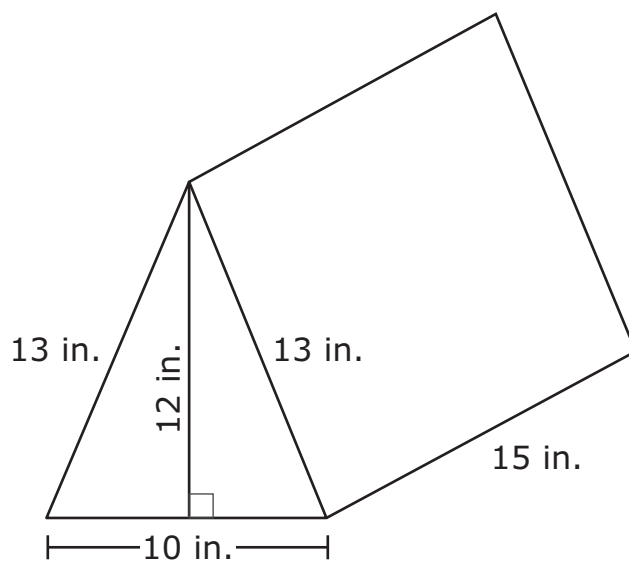
Enter your answer in the space provided. Show all your work to support your answer.

14. Joley bought x hockey tickets for a hockey game for \$118.32 each. The processing fee was \$29.45. Joley spent a total of \$502.73.

- Write an equation to determine the number of hockey tickets Joley bought, x .
- How many hockey tickets did Joley buy?
- How would the equation and solution change if Joley spent a total less than \$502.73 instead of a total of \$502.73?

Enter your answer in the space provided. Show all your work to support your answer.

- 15.** A paper company is manufacturing a new gift box in the shape of a right triangular prism, as shown.



What is the total surface area of all five faces of the gift box?

- A.** 405 square inches
- B.** 510 square inches
- C.** 660 square inches
- D.** 810 square inches

- 16.** A group of students are conducting a survey about the favorite sport among 7th graders at their school. They plan to conduct a survey with a sample of students. Which approach will give them the most representative sample?
- A.** Surveying only the students who are their friends
 - B.** Surveying all the students in one 7th grade homeroom class
 - C.** Surveying only the students who are in the school's sports club
 - D.** Surveying a randomly selected group of 7th grade students from different classes

- 17.** This question has two parts.

A map uses a scale where 1 inch represents 200 feet.

Part A

On the map, the length of a city block is $3\frac{3}{4}$ inches. What is the length, in feet, of the actual city block?

Enter your answer in the space.

Part B

The actual width of another city block is 450 feet. What is the width, in inches, of the city block on the map?

Enter your answer in the space.

18. This question has two parts.

Jasmine earns a commission of 15% on all the items she sells at her retail job. This month, she sold \$2,300.00 worth of items.

Part A

How much money, in dollars, did Jasmine earn this month from her commission?

Enter your answer in the space.

Part B

Jasmine is planning to increase her sales next month by 5% to earn more commission. If she achieves her goal, how much will she earn in commission next month, in dollars?

- A.** \$115.00
- B.** \$362.25
- C.** \$460.00
- D.** \$517.50

19. A number cube has sides numbered from 1 to 6. The cube is rolled 900 times. About how many times would the cube be expected to land with a number less than 3 face up?

- A.** 150
- B.** 300
- C.** 450
- D.** 600

20. A scuba diver jumps off a platform that is 6 feet above sea level and dives to 12 feet below sea level.

- What integers represent the elevation of the scuba diver on the platform and the depth of the scuba diver after the dive?
- What does zero represent in this situation?
- Write an expression to determine the change in the scuba diver's elevation, in feet.
- What was the change in the scuba diver's elevation?

Enter your answer in the space provided. Show all your work to support your answer.

- 21.** The total cost of baseballs is proportional to the number of baseballs purchased. The table shows the total cost in dollars, t , of n baseballs.

Cost of Baseballs

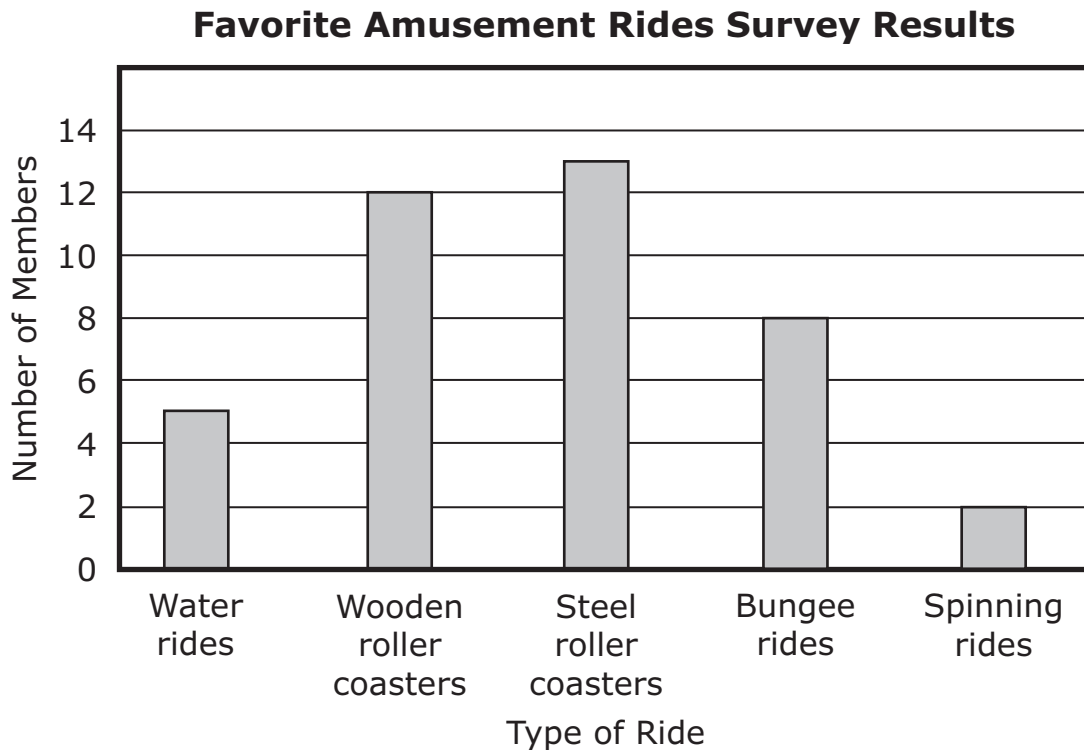
Number of Baseballs, n	Total Cost, t
3	\$36
7	\$84
11	\$132

- What is the constant of proportionality shown in the table?
- Write an equation to represent the proportional relationship.
- The point (14, 168) is on the graph of this proportional relationship. Explain what the point means in this situation.

Enter your answer in the space provided. Show all your work to support your answer.

22. This question has two parts.

A group of randomly selected members of the Amusement Park Riders Club were asked to choose their favorite type of ride from five categories. The bar graph shows the results of the survey. There are a total of 250 members in the Amusement Park Riders Club.



Part A

Based on the data, which of these is the most reasonable estimate for the number of Amusement Park Riders Club members whose favorite type of ride is wooden roller coasters?

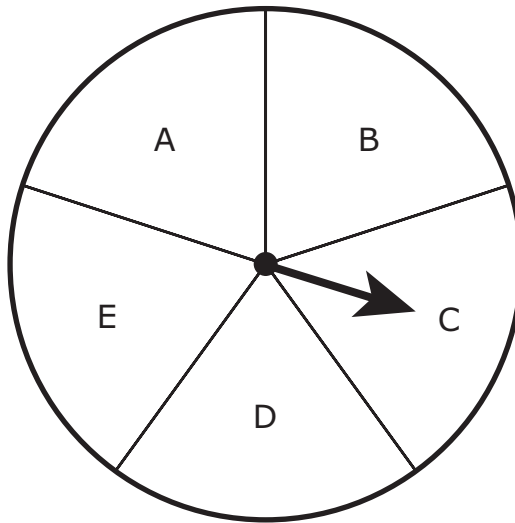
- A.** 50
- B.** 60
- C.** 75
- D.** 81

Part B

Based on the data, how many more club members would be likely to choose water rides than to choose spinning rides?

- A.** 8
- B.** 12
- C.** 18
- D.** 31

- 23.** Jorge will spin the spinner shown 100 times.



What is the **best** prediction for the number of times Jorge will spin an A or a B?

- A.** Exactly 20 times
 - B.** Close to 20 times
 - C.** Exactly 40 times
 - D.** Close to 40 times
- 24.** When making gravy, Pauline uses $\frac{2}{3}$ tablespoon of cornstarch for every $\frac{1}{3}$ cup of water to thicken the gravy.
- How many tablespoons of cornstarch does Pauline use for every cup of water?
- Enter your answer in the space.

25. This question has two parts.

Part A

Xander earns \$20.00 per hour. He gets a 5% raise. How much will Xander earn per hour, in dollars, after his raise?

Enter your answer in the space.

Part B

Lyla earns \$22.00 per hour. She gets a 10% raise. How much will Lyla earn per hour, in dollars, after her raise?

Enter your answer in the space.

26. This question has two parts.

A shipping box is 8 inches long, 4 inches wide, and 6 inches tall.

Part A

- Write an equation to find the volume of the shipping box in cubic inches.
- What is the volume of the shipping box?
- Show your work.

Enter your answer in the space provided. Show all your work to support your answer.

Part B

Each dimension of the shipping box is doubled to create a larger shipping box.

- Write an equation to find the volume of the larger shipping box in cubic inches.
- What is the volume of the larger shipping box?
- Show your work.

Enter your answer in the space provided. Show all your work to support your answer.

27. This question has two parts.

For her family's Cinco de Mayo celebration, Camille makes homemade corn tortillas. Each tortilla has a diameter of 6 inches.

Part A

Which measurement is closest to the circumference of one of her tortillas?
Use 3.14 for π .

- A.** 9.42 inches
- B.** 18.84 inches
- C.** 28.26 inches
- D.** 37.68 inches

Part B

Which measurement is closest to the area of one of her tortillas? Use 3.14 for π .

- A.** 9.42 square inches
- B.** 18.84 square inches
- C.** 28.26 square inches
- D.** 113.04 square inches



Please let your teacher know that you have completed your test.



