

Name _____

1. Select all the rational numbers.

- 3.02859...
 3
 3.14159...
 $3.\bar{7}$
 1.41421...

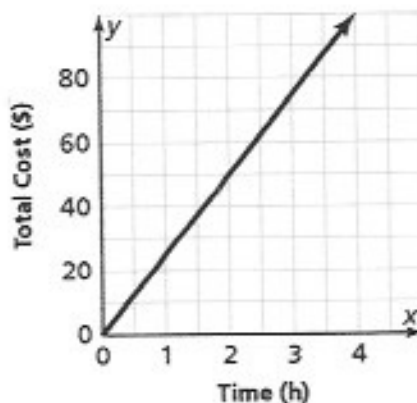
2. Select all the numbers that are irrational.

- 6.7234724...
 $\frac{315}{8}$
 -0.25
 $\sqrt{7}$
 $\frac{17}{36}$

3. A scuba diver is 15.5 feet below the surface of the water. If the diver continues to swim downward at a rate of 2.5 feet per second, what integer represents her location relative to the surface after 7 seconds? How far does the diver have to go to return to the surface?

4. The record high temperature on January 15 is 41°F . The record low temperature on that day is -16°F . What is the difference in the record temperatures?

5. The graph represents the cost of renting a generator from a hardware store.



Part A

What does the point (0, 0) mean in the problem situation?

Part B

Choose one ordered pair on the graph and explain what it means in the problem situation.

6. Marcelo had \$49.13 in his bank account. He paid two fees of \$32.50 each, and then he made two deposits of \$74.25 each.

Part A

Write an expression to represent the situation.

Part B

What is the balance in Marcelo's account now?

7. Select all the expressions that are equivalent to $(-60) \div 5$.

- $60 \div (-5)$
 $(-60) \div (-5)$
 $(-60) \times \frac{1}{5}$
 $60 \times (-\frac{1}{5})$
 $(-60) \times (-\frac{1}{5})$

8. How would you write $0.\overline{7}$ as a fraction?

- (A) $\frac{5}{8}$
(B) $\frac{6}{7}$
(C) $\frac{7}{9}$
(D) $\frac{7}{100}$

9. An overweight dog is put on a special diet. Use the table to determine the dog's average weight change per week.

Week Number	Weight Change (oz)
1	-1.5
2	2.2
3	-0.8
4	-1.6
5	-0.6

10. China has a population of approximately 1,382,323,332 people. The population of the United States is about 324,118,787 people.

Part A

Approximate each population using scientific notation. Round the first factor to the nearest tenth.

Part B

About how many more people live in China than in the United States? Express your answer using scientific notation.

11. Kenny bought a 50-pound bag of chicken feed for \$29.98 and a 25-pound bag for \$15.49. Can you use proportional reasoning to find the price of a 40-pound bag? Explain.

12. Select all the tables that represent a proportional relationship.

<i>x</i>	2	4	6	8	10
<i>y</i>	5	10	15	20	25

<i>x</i>	3	5	7	9	11
<i>y</i>	12	20	28	36	44

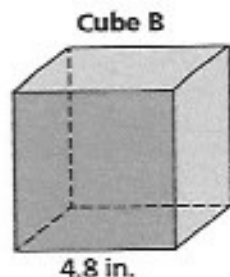
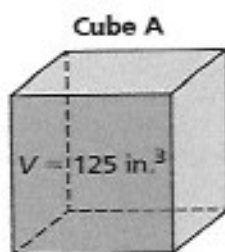
<i>x</i>	4	6	8	10	12
<i>y</i>	10	16	24	34	46

<i>x</i>	21	35	49	63	77
<i>y</i>	3	5	7	9	11

<i>x</i>	6	8	10	12	14
<i>y</i>	7	11	19	31	47

13. Water evaporates from a pond at a rate of 0.05 inches per hour. What is the change in the water level of the pond after 24 hours? Express your answer as a rational number.

14. Cube A has a volume of 125 cubic inches. The edge lengths of Cube B measure 4.8 inches. Which cube is larger? Explain.



15. Select all the expressions that are equivalent to $3^{12} \cdot 7^9$.

- $3^3 \cdot 3^4 \cdot 4^9$
- $(3^3)^9 \cdot (7^3)^6$
- $7^3 \cdot (3^{-4})^{-3} \cdot 7^6$
- $(3^3 + 3^9) \cdot (7^6 + 7^3)$
- $3^{20} \cdot (7^3)^3 \cdot (3^4)^{-2}$

16. Abigail is going for a hike. After 6 km, she has gained 800 m in elevation. She stops for a break, then turns around and returns the way she came. How many kilometers did Abigail hike in total?
What was her total change in elevation when she finished the hike?

17. Each year, the students in seventh grade go to an environmental camp. This year, the total cost is \$1,580 for 79 students.

Part A

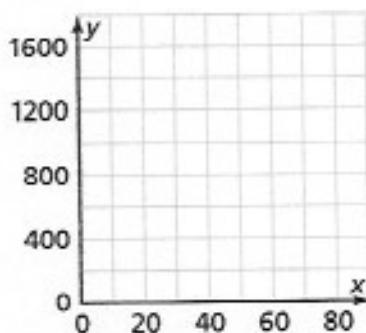
How much does it cost for each student to attend the camp?

Part B

Write an equation to represent the cost, y , of attending the camp for x number of students.

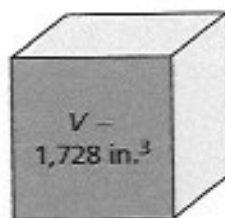
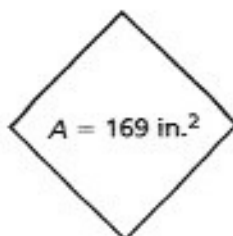
Part C

Graph the equation from Part B. Label the graph.



18. Which of the following represents the lowest speed in miles per hour?
- (A) 6 miles in $\frac{1}{8}$ hour
 (B) 11 miles in $\frac{1}{4}$ hour
 (C) 16 miles in $\frac{3}{8}$ hour
 (D) 20 miles in $\frac{1}{2}$ hour

19. Can square pieces of foam board, each with an area of 169 square inches, be cut and used to construct a cube with a volume of 1,728 cubic inches? Explain.



20. Select all the products that are negative.
- $(-4)(-9)(2)$
 $(-4)(9)$
 $(6)(6)(-2)$
 $(-6)(-6)$
 $(6)(-6)$

21. A farm processes 6,000 gallons of milk every hour. Which equation represents the amount of milk, y , that the farm processes in x hours?

- (A) $y = 6,000 + x$
- (B) $y = \frac{x}{6,000}$
- (C) $y = 6,000x$
- (D) $y = \frac{6,000}{x}$

22. The table shows the prices charged at a dry cleaner.

Number of Shirts	Price
4	\$3.96
10	\$9.90
16	\$15.84
22	\$21.78

Is the relationship between the price and number of shirts proportional? Explain.

23. A silicon chip is 14 nanometers thick. A nanometer is equal to 0.000000001 meter. Express the thickness of the chip in cm using scientific notation.

- (A) 14×10^{-9} cm
- (B) 1.4×10^{-8} cm
- (C) 1.4×10^8 cm
- (D) 1.4×10^9 cm

24. What is the reciprocal of $-3\frac{2}{7}$?

- (A) $-3\frac{7}{2}$
- (B) $-\frac{23}{7}$
- (C) $-\frac{7}{23}$
- (D) $3\frac{2}{7}$

25. Find $\frac{6.3 \times 10^{-5}}{9 \times 10^{-3}}$. Write your answer in scientific notation.

26. Complete the table.

Exponent Form	Simplified Form
6^{-1}	
6^{-2}	
6^{-3}	
6^{-4}	

27. The value of a stock increases $14\frac{2}{3}$ points twice in one week. The other three days the value decreases by 10 points, $8\frac{1}{3}$ points, and $12\frac{2}{3}$ points. By how many points did the value of the stock change that week?

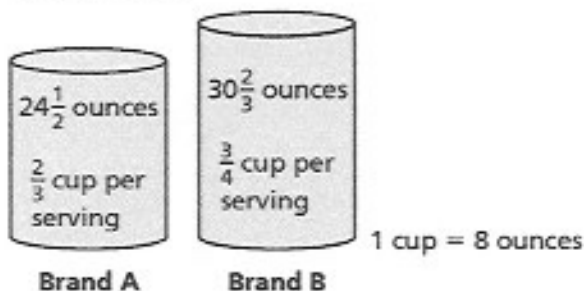
- (A) $\frac{2}{3}$ points
- (B) $\frac{1}{3}$ points
- (C) $-1\frac{1}{3}$ points
- (D) $-1\frac{2}{3}$ points

28. What is the value of n in the equation $2.3 \times 10^9 = (1 \times 10^3)(2.3 \times 10^n)$?

29. Which fruit has the lowest unit price?

- (A) 2.5 pounds of grapes for \$4.19
- (B) 4 pounds of apples for \$5.49
- (C) 5 pounds of oranges for \$6.99
- (D) 6.5 pounds of strawberries for \$9.59

30. A store sells two brands of applesauce.



Which brand provides more servings?
Explain.