*Indicate the answer choice that best completes the statement or answers the question.*

1. Jake goes to the grocery store and buys 3 apples, 2 cans of soup, and 1 box of cereal. The apples cost $0.89 each; the soup costs $2.98 per can; and the box of cereal costs $4.99. Write an equation that represents the total cost $c$ of Jake's purchases.

   a. $c = (3 + 0.89) + (2 + 2.98) + 4.99$     b. $c = (3 + 0.89) \cdot (3 + 2.98) + 4.99$

   c. $c = (3 \cdot 0.89) + (2 \cdot 2.98) + 4.99$     d. $c = (3 \cdot 0.89) \cdot (2 \cdot 2.98) + 4.99$

2. Mr. Thomas wants to buy a boat. He must make 48 monthly payments to pay back the amount he borrowed, plus interest. His monthly payment is $161.85. What other information is necessary to determine the amount of money Mr. Thomas borrowed from the bank?

   a. How much Mr. Thomas makes per month     b. The interest rate the bank charges

   c. How much a boat license costs     d. How much the value of the boat will increase

3. Ricky jogs 5 laps around a track in 8 minutes. Which of the following would be the same number of laps per minute?

   a. 7 laps in 9.6 minutes     b. 10 laps in 15.6 minutes

   c. 12 laps in 19.2 minutes     d. 8 laps in 20 minutes

4. The planet Mercury is about $5.80 \times 10^7$ kilometers from the Sun. Express this number in standard notation.

   a. 0.0000058     b. 0.00000058

   c. 5,800,000     d. 58,000,000

5. Which of the following is equivalent to the expression $8^{-5} \times 8^2$?

   a. $\dfrac{1}{8^7}$     b. $\dfrac{1}{8^3}$

   c. $8^3$     d. $8^7$

6. What is the solution of the equation? $\dfrac{2}{5}(y + 10) = 8$

   a. $y = -5$     b. $y = 10$
   c. $y = 20$     d. $y = 30$

7. What is the solution of the system of equations?
   $y = 2x$
   $y = x + 5$

   a. $(0, 5)$     b. $(1\frac{2}{3}, 6\frac{2}{3})$

   c. $(2, 7)$     d. $(5, 10)$

8. Barb walked 1.3 miles to her friend's house then $\dfrac{3}{4}$ mile to the library. How far did Barb walk in all?

   a. $1\dfrac{9}{40}$ miles     b. $1\dfrac{3}{7}$ miles

   c. $2\dfrac{1}{20}$ miles     d. $2\dfrac{1}{10}$ miles

9. Which of the following sets of numbers does $\sqrt{121}$ NOT belong?

a. integer            b. real number

c. rational number     d. irrational number

10. What is the decimal expansion of $-\dfrac{11}{15}$?

a. $-0.7\overline{3}$      b. $-0.\overline{73}$

c. $-0.73$      d. $-0.7$

11. Between which two numbers on a number line does $\sqrt{70}$ fall?

a. 6 and 7      b. 7 and 8

c. 8 and 9      d. 9 and 10

12. Which of the following sets of numbers is correctly ordered from least to greatest?

a. $4.2, \sqrt{16}, 4\dfrac{1}{3}, \sqrt{18}$      b. $4.2, \sqrt{16}, \sqrt{18}, 4\dfrac{1}{3}$

c. $\sqrt{16}, 4.2, 4\dfrac{1}{3}, \sqrt{18}$      d. $\sqrt{16}, 4.2, \sqrt{18}, 4\dfrac{1}{3}$

13. Which algebraic expression can be used to find the $n$th term in the following sequence?

6, 10, 14, 18, 22,...

a. $n + 4$      b. $6n + 4$

c. $6n$      d. $4n + 2$

14. Which of the following is not a linear function?

a. $y = \frac{1}{3}x - 2$     b.
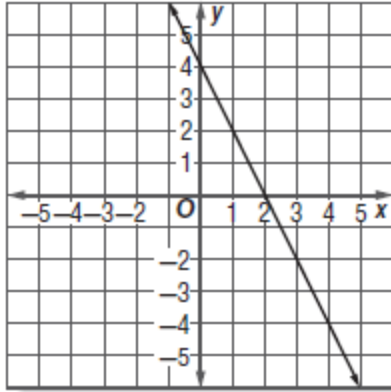


c. $y = 2x^2$     d.
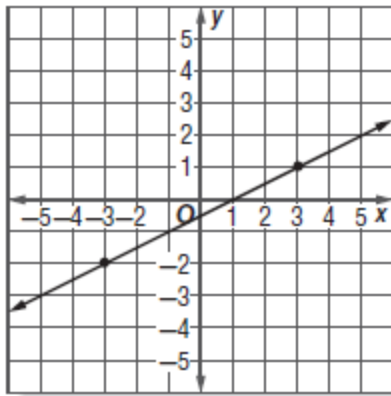


15. Mrs. Junkin wrote the function $f(x) = \frac{2}{3}x - 5$ on the chalkboard. What is the value of this function for $f(6)$?

a. −1     b. 1
c. 7     d. 9

16. Which best describes the graph of the function $f(x) = -5x$?

a. A straight line through the origin with a steep slope upward to the right.

b. A straight line through the origin with a steep slope downward to the right.

c. A straight line through −5 on the $x$-axis with a slope downward to the right.

d. A straight line through −5 on the $y$-axis with a slope upward to the right.

17. Which function described has the greatest rate of change?

**I** $f(x) = 5x + 7$

**II** $f(x) = \frac{1}{3}x - 1$

**III**

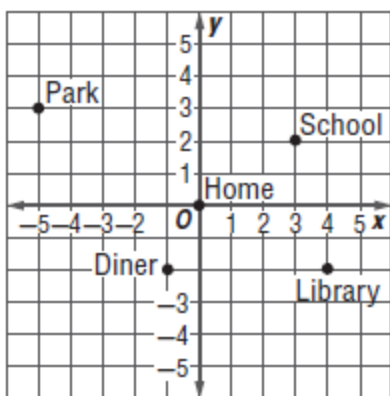| x | f(x) |
|---|------|
| 1 | 4 |
| 2 | 8 |
| 3 | 12 |
| 4 | 16 |

a. I      b. II

c. III    d. They all have the same rate of change.

18. What is the slope of the function described in the table below?

| x | y |
|---|-----|
| 0 | −3 |
| 2 | −2 |
| 4 | −1 |
| 6 | 0 |

a. −3    b. $\frac{1}{2}$

c. 2    d. 3

19. Robin's neighborhood is mapped out on the graph below. Each unit on the map represents 1 mile.



About how far apart are the park and diner?

a. about 4 miles    b. about 5 miles

c. about 6.4 miles    d. about 10 miles

20. Jason is experimenting with different ramps to replace the stair step into his house. The table below shows the measure of a given angle *m* and its complement.

| Measure of ∠m | Measure of ∠m's Complement |
|---|---|
| 5° | 85° |
| 15° | 75° |
| 25° | 65° |
| 35° | 55° |
| 45° | 45° |

Based on the table, which of the following statements is true?

a. As the measure of ∠m decreases, its complement decreases by 10 degrees.

b. ∠m and its complement form an acute angle.

c. The sum of the measures of ∠m and its complement is 90.

d. Subtracting 45 from the measure of ∠m will determine its complement.

21. The following figures are formed using a semicircle and a rectangle.



24 cm
30 cm
Area
1073.25 cm²

12 cm
30 cm
Area
713.25 cm²

6 cm
30 cm
Area
533.25 cm²
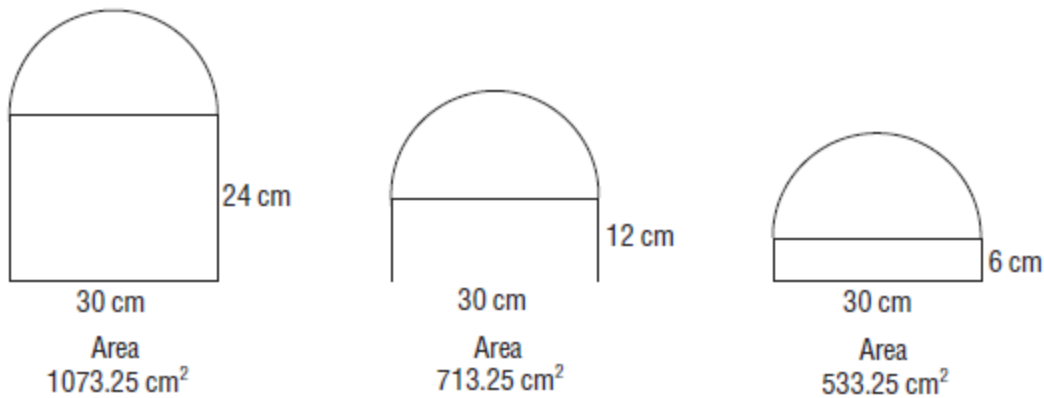
Based on this pattern, what will be the area of the next figure?

a. 266.625 cm² because the next figure will decrease in area by $\frac{1}{2}$ the previous figure.

b. 173.25 cm² because the next figure will decrease in area by 360 cm².

c. 353.25 cm² because the next figure will decrease in area by 180 cm².

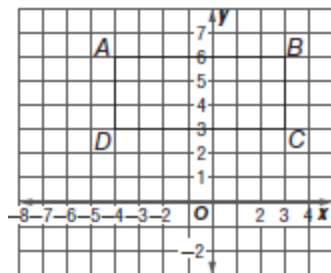d. 443.25 cm² because the next figure will decrease in area by 90 cm².

22. Rectangle *ABCD* is shown on the coordinate grid below. Which of the following graphs represents the translation of Rectangle *ABCD* over the following: $(x, y) \rightarrow (x - 2, y + 1)$?
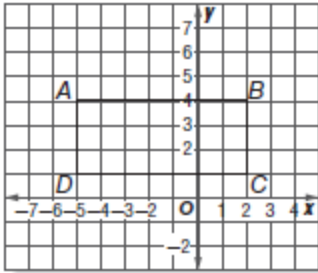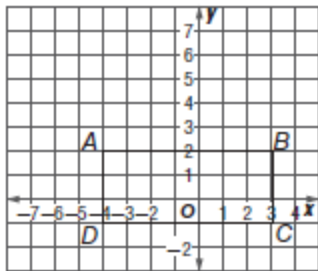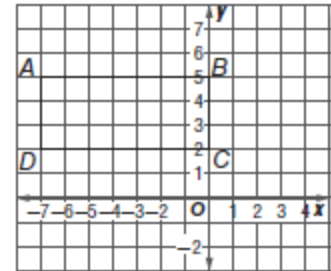


a.
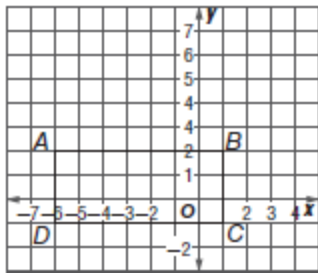


b.



c.



d.



23. A photo with a length of 4 inches and a width of 6 inches is enlarged to fit in a large picture frame. The photo and the enlarged picture are similar. The length of the enlarged picture is 14 inches. What is the width of the enlarged picture?

a. 9.3 inches    b. 14 inches

c. 21 inches    d. 56 inches

24. The lengths of the sides of a right triangle are 9 centimeters and 40 centimeters. What is the length of the hypotenuse?

a. 31 centimeters    b. 41 centimeters

c. 49 centimeters    d. 81 centimeters

25. Which of the following represents the measures of the sides of a right triangle?

a. 9 cm, 12 cm, 15 cm    b. 6 cm, 7 cm, 8 cm

c. 5 cm, 10 cm, 12 cm    d. 7 cm, 12 cm, 13 cm

26. A cylindrical soup can has a radius of 4 centimeters and a height of 12 centimeters. What is the volume of the soup can to the nearest tenth?

a. $150.8 \ cm^3$     b. $192.0 \ cm^3$

c. $301.4 \ cm^3$     d. $603.2 \ cm^3$

27. Four cards numbered 1, 5, 8, and 9 are placed in a bag. A card is drawn at random and then replaced. Then a card is drawn at random again. What is the probability that both cards drawn have the number 9?

a. $\frac{1}{16}$     b. $\frac{1}{9}$

c. $\frac{1}{4}$     d. $\frac{1}{2}$

28. A company has five employees. Their annual earnings, in dollars, are shown below.

| 24,000 | 24,000 | 28,000 | 30,000 | 125,000 |
|--------|--------|--------|--------|---------|

Which of the following measures best represents the typical annual earnings of an employee of the company?

a. mean     b. median

c. mode     d. range

29. The scatter plot below shows the yearly advertising expenditures and the relative sales for a small company. Which of the following statements is true?
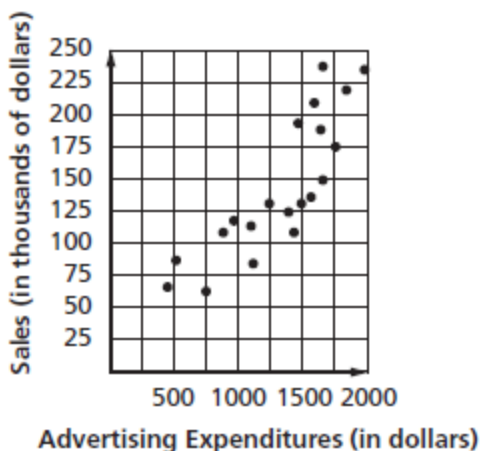


a. A line of best fit can be drawn from the origin with a slope going upward to the right.

b. A line of best fit can be drawn vertically from an expenditure of $1500.

c. A line of best fit can be drawn horizontally from a sales of $125,000.

d. The data has no correlation, so a line of best fit cannot be drawn.

30. The frequency table below shows the test scores for Mr. Cortez's English class. What is the relative frequency for a test score 81-90%?

| Test Scores | | |
|---|---|---|
| Score (%) | Tally | Frequency |
| 91–100 | 卌 l | 6 |
| 81–90 | 卌 lll | 8 |
| 71–80 | 卌 | 5 |
| 61–70 | lll | 3 |

a. $\dfrac{3}{11}$    b. $\dfrac{3}{10}$

c. $\dfrac{4}{11}$    d. $\dfrac{2}{5}$

## Answer Key

1. c

2. b

3. c

4. d

5. b

6. b

7. d

8. c

9. d

10. a

11. c

12. d

13. d

14. c

15. a

16. b

17. a

18. b

19. c

20. c

21. d

22. d

23. c

24. b

25. a

26. d

27. a

28. b

29. a

30. c