

Math

27 QUESTIONS

DIRECTIONS

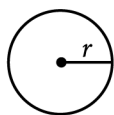
The questions in this section address a number of important math skills.
Use of a calculator is permitted for all questions.

NOTES

Unless otherwise indicated:

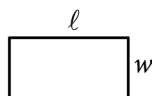
- All variables and expressions represent real numbers.
- Figures provided are drawn to scale.
- All figures lie in a plane.
- The domain of a given function f is the set of all real numbers x for which $f(x)$ is a real number.

REFERENCE

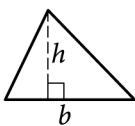


$$A = \pi r^2$$

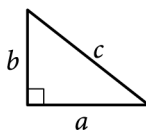
$$C = 2\pi r$$



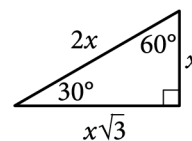
$$A = \ell w$$



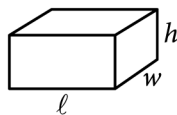
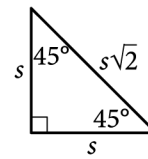
$$A = \frac{1}{2}bh$$



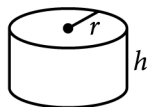
$$c^2 = a^2 + b^2$$



Special Right Triangles



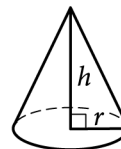
$$V = \ell wh$$



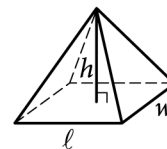
$$V = \pi r^2 h$$



$$V = \frac{4}{3}\pi r^3$$



$$V = \frac{1}{3}\pi r^2 h$$



$$V = \frac{1}{3}\ell wh$$

The number of degrees of arc in a circle is 360.

The number of radians of arc in a circle is 2π .

The sum of the measures in degrees of the angles of a triangle is 180.

For multiple-choice questions, solve each problem, choose the correct answer from the choices provided, and then circle your answer in this book. Circle only one answer for each question. If you change your mind, completely erase the circle. You will not get credit for questions with more than one answer circled, or for questions with no answers circled.

For student-produced response questions, solve each problem and write your answer next to or under the question in the test book as described below.

- Once you've written your answer, circle it clearly. You will not receive credit for anything written outside the circle, or for any questions with more than one circled answer.
- If you find **more than one correct answer**, write and circle only one answer.
- Your answer can be up to 5 characters for a **positive** answer and up to 6 characters (including the negative sign) for a **negative** answer, but no more.
- If your answer is a **fraction** that is too long (over 5 characters for positive, 6 characters for negative), write the decimal equivalent.
- If your answer is a **decimal** that is too long (over 5 characters for positive, 6 characters for negative), truncate it or round at the fourth digit.
- If your answer is a **mixed number** (such as $3\frac{1}{2}$), write it as an improper fraction ($\frac{7}{2}$) or its decimal equivalent (3.5).
- Don't include **symbols** such as a percent sign, comma, or dollar sign in your circled answer.

1

How many yards are equivalent to 612 inches?
(1 yard = 36 inches)

- A) 0.059
- B) 17
- C) 576
- D) 22,032

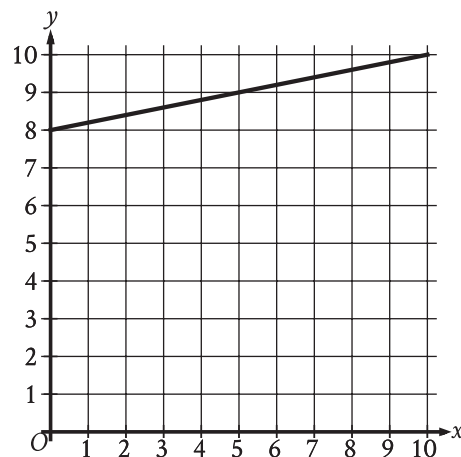
2

Response	Frequency
Once a week or more	3
Two or three times a month	16
About once a month	26
A few times a year	73
Almost never	53
Never	29
Total	200

The table gives the results of a survey of 200 people who were asked how often they see a movie in a theater. How many people responded either “never” or “almost never”?

- A) 24
- B) 53
- C) 82
- D) 118

3



What is the y -intercept of the line graphed?

- A) $(0, -8)$
- B) $\left(0, -\frac{1}{8}\right)$
- C) $(0, 0)$
- D) $(0, 8)$

4

What value of p satisfies the equation
 $5p + 180 = 250$?

- A) 14
- B) 65
- C) 86
- D) 250

5

What is the area, in square centimeters, of a rectangle with a length of 36 centimeters and a width of 34 centimeters?

- A) 70
- B) 140
- C) 1,156
- D) 1,224

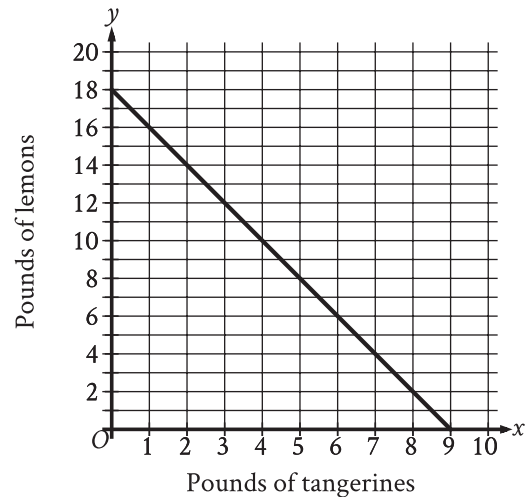
6

There are 170 blocks in a container. Of these blocks, 10% are green. How many blocks in the container are green?

7

The equation $46 = 2a + 2b$ gives the relationship between the side lengths a and b of a certain parallelogram. If $a = 9$, what is the value of b ?

8



The graph shows the possible combinations of the number of pounds of tangerines and lemons that could be purchased for \$18 at a certain store. If Melvin purchased lemons and 4 pounds of tangerines for a total of \$18, how many pounds of lemons did he purchase?

- A) 7
- B) 10
- C) 14
- D) 16

9

The area of a square is 64 square inches. What is the side length, in inches, of this square?

- A) 8
- B) 16
- C) 64
- D) 128

10

Connor has c dollars and Maria has m dollars. Connor has 4 times as many dollars as Maria, and together they have a total of \$25.00. Which system of equations represents this situation?

- A) $c = 4m$
 $c + m = 25$
- B) $m = 4c$
 $c + m = 25$
- C) $c = 25m$
 $c + m = 4$
- D) $m = 25c$
 $c + m = 4$

11

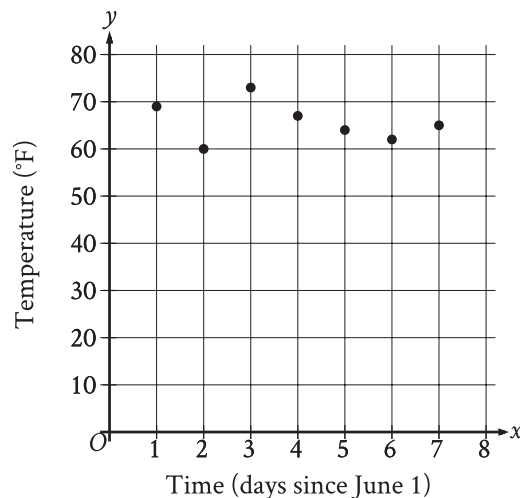
$$d = 16t$$

The given equation represents the distance d , in inches, where t represents the number of seconds since an object started moving. Which of the following is the best interpretation of 16 in this context?

- A) The object moved a total of 16 inches.
- B) The object moved a total of $16t$ inches.
- C) The object is moving at a rate of 16 inches per second.
- D) The object is moving at a rate of $\frac{1}{16}$ inches per second.

12

The scatterplot shows the temperature y , in $^{\circ}\text{F}$, recorded by a meteorologist at various times x , in days since June 1.



During which of the following time periods did the greatest increase in recorded temperature take place?

- A) From $x = 6$ to $x = 7$
- B) From $x = 5$ to $x = 6$
- C) From $x = 2$ to $x = 3$
- D) From $x = 1$ to $x = 2$

13

A distance of 112 furlongs is equivalent to how many feet? (1 furlong = 220 yards and 1 yard = 3 feet)

14

$$j(x) = mx + 144$$

For the linear function j , m is a constant and $j(12) = 18$. What is the value of $j(10)$?

15

$$y = 4x - 9$$

$$y = 19$$

What is the solution (x, y) to the given system of equations?

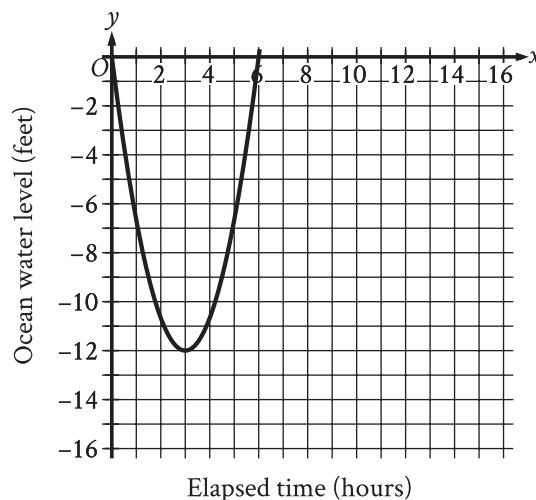
- A) (4, 19)
- B) (7, 19)
- C) (19, 4)
- D) (19, 7)

16

Which expression is equivalent to $256w^2 - 676$?

- A) $(16w - 26)(16w - 26)$
- B) $(8w - 13)(8w + 13)$
- C) $(8w - 13)(8w - 13)$
- D) $(16w - 26)(16w + 26)$

17



Scientists recorded data about the ocean water levels at a certain location over a period of 6 hours. The graph shown models the data, where $y = 0$ represents sea level. Which table gives values of x and their corresponding values of y based on the model?

A)

x	y
0	-12
0	3
3	6

B)

x	y
0	0
3	12
0	-6

C)

x	y
0	0
3	-12
6	0

D)

x	y
0	0
12	3
-6	0

18

Line k is defined by $y = 3x + 15$. Line j is perpendicular to line k in the xy -plane. What is the slope of line j ?

- A) $-\frac{1}{3}$
- B) $-\frac{1}{12}$
- C) $-\frac{1}{18}$
- D) $-\frac{1}{45}$

19

A store sells two different-sized containers of a certain Greek yogurt. The store's sales of this Greek yogurt totaled 1,277.94 dollars last month. The equation $5.48x + 7.30y = 1,277.94$ represents this situation, where x is the number of smaller containers sold and y is the number of larger containers sold. According to the equation, which of the following represents the price, in dollars, of each smaller container?

- A) 5.48
- B) $7.30y$
- C) 7.30
- D) $5.48x$

20

A right rectangular prism has a length of 28 centimeters (cm), a width of 15 cm, and a height of 16 cm. What is the surface area, in cm^2 , of the right rectangular prism?

21

If $3x^2 - 18x - 15 = 0$, what is the value of $x^2 - 6x$?

22

Which expression is equivalent to $(d - 6)(8d^2 - 3)$?

- A) $8d^3 - 14d^2 - 3d + 18$
- B) $8d^3 - 17d^2 + 48$
- C) $8d^3 - 48d^2 - 3d + 18$
- D) $8d^3 - 51d^2 + 48$

23

A right triangle has legs with lengths of 28 centimeters and 20 centimeters. What is the length of this triangle's hypotenuse, in centimeters?

- A) $8\sqrt{6}$
- B) $4\sqrt{74}$
- C) 48
- D) 1,184

24

Each of the following frequency tables represents a data set. Which data set has the greatest mean?

A)

Value	Frequency
70	4
80	5
90	6
100	7

B)

Value	Frequency
70	6
80	6
90	6
100	6

C)

Value	Frequency
70	7
80	6
90	6
100	7

D)

Value	Frequency
70	8
80	5
90	5
100	8

25

$$\begin{aligned}8x + 7y &= 9 \\ 24x + 21y &= 27\end{aligned}$$

For each real number r , which of the following points lies on the graph of each equation in the xy -plane for the given system?

- A) $\left(r, -\frac{8r}{7} + \frac{9}{7}\right)$
- B) $\left(-\frac{8r}{7} + \frac{9}{7}, r\right)$
- C) $\left(-\frac{8r}{7} + 9, \frac{8r}{7} + 27\right)$
- D) $\left(\frac{r}{3} + 9, -\frac{r}{3} + 27\right)$

26

A salesperson's total earnings consist of a base salary of x dollars per year, plus commission earnings of 11% of the total sales the salesperson makes during the year. This year, the salesperson has a goal for the total earnings to be at least 3 times and at most 4 times the base salary. Which of the following inequalities represents all possible values of total sales s , in dollars, the salesperson can make this year in order to meet that goal?

- A) $2x \leq s \leq 3x$
- B) $\frac{2}{0.11}x \leq s \leq \frac{3}{0.11}x$
- C) $3x \leq s \leq 4x$
- D) $\frac{3}{0.11}x \leq s \leq \frac{4}{0.11}x$

27

The number a is 70% less than the positive number b . The number c is 60% greater than a . The number c is how many times b ?

STOP

**If you finish before time is called, you may check your work on this module only.
Do not turn to any other module in the test.**

No Test Material On This Page