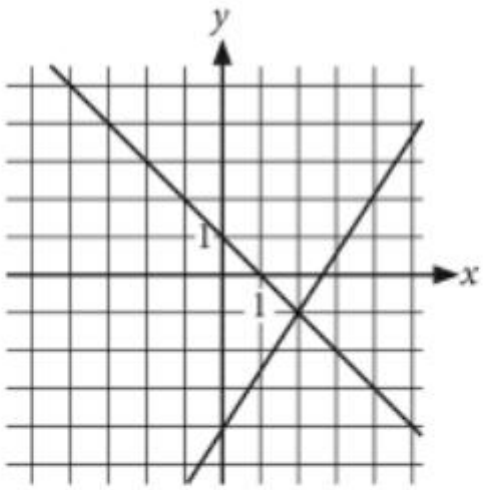
1.



A system of two linear equations is graphed on the xy-plane above. Which of the following ordered pairs (x, y) is the solution to the system?

A) $(1, 1)$

B) $(1, -2)$

C) $(2, -1)$

D) $(2, 1)$

2.

In the xy-plane, what is the y-intercept of the line with equation $y = 4x - 1$?

A) 4

B) $\frac{1}{4}$

C) $-\frac{1}{4}$

D) -1

3.

What is the slope of the line with equation $4x-2y=11$?

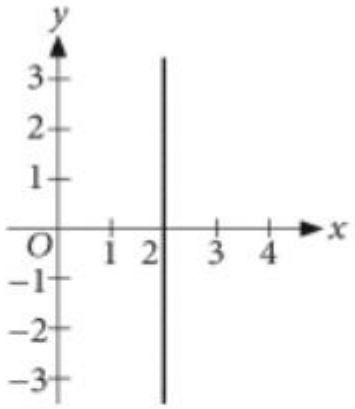
A) -2

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

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

D) 2

4.



Which of the following is an equation of the line shown in the *xy*-plane above?

A) $y=2$

B) $x=2$

C) $y=2x$

D) $x=2y$

5.

Which of the following is an equation of the line in the *xy*-plane that has a slope of 2 and passes through the point (0, -3)?

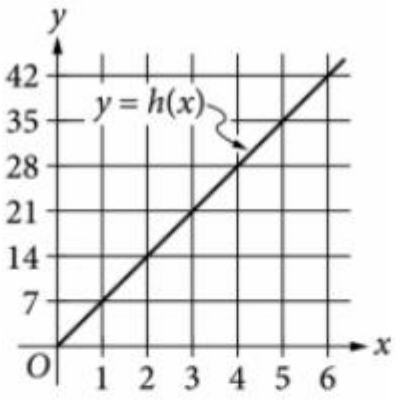
A) $y=-3x+2$

B) $y=-3x-2$

C) $y=2x+3$

D) $y=2x-3$

6.



The line in the xy-plane above represents the relationship between the height $h(x)$, in feet, and the base diameter x, in feet, for cylindrical Doric columns in ancient Greek architecture. How much greater is the height of a Doric column that has a base diameter of 5 feet than the height of a Doric column that has a base diameter of 2 feet?

A) 7 feet

B) 14 feet

C) 21 feet

D) 24 feet

7.

Which of the following equations, when graphed in the xy-plane, would result in a line with slope of 4 that passes through the point $(0, -3)$?

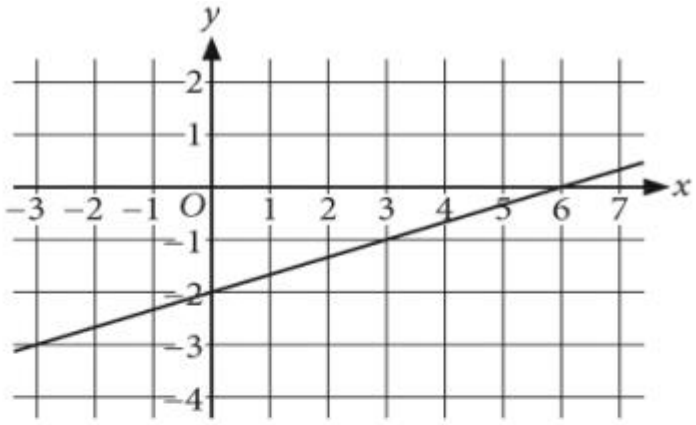
A) $y = -4x + 3$

B) $y = -3x + 4$

C) $y = 4x - 3$

D) $y = 3x - 4$

8.



Which of the following is an equation of the graph shown?

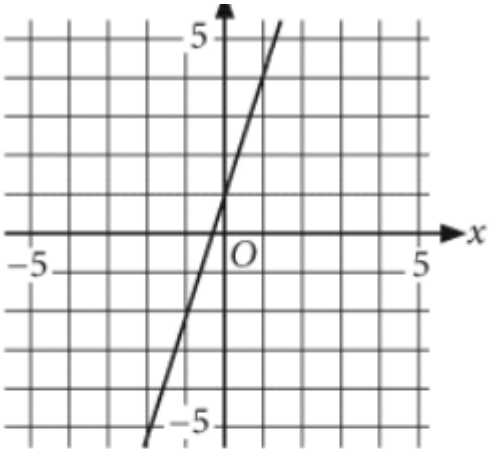
A) $y = \frac{1}{3}x + 6$

B) $y = \frac{1}{3}x - 2$

C) $y = 3x + 6$

D) $y = 3x - 2$

9.



The graph of a line is shown in the xy-plane above. Which of the following is an equation of the line?

A) $y = \frac{1}{3}x + 1$

B) $y = x + 1$

C) $y = x + 3$

D) $y = 3x + 1$

10 .

What are the slope and the y-intercept of the graph in the xy-plane of the equation $5x + 4y + 3 = 0$?

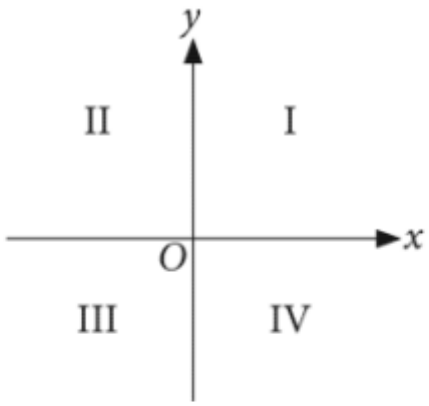
A) The slope is $-\frac{5}{4}$, and the y-intercept is $(0, -\frac{3}{4})$.

B) The slope is $-\frac{5}{4}$, and the y-intercept is $(0, \frac{3}{4})$.

C) The slope is $\frac{5}{4}$, and the y-intercept is $(0, -\frac{3}{4})$.

D) The slope is $\frac{5}{4}$, and the y-intercept is $(0, \frac{3}{4})$.

11.



The graph (not shown) of a linear function h, where $y = h(x)$, is a line completely contained in only quadrants I and II. Which of the following could define the function h ?

A) $h(x) = 3x + 3$

B) $h(x) = 3x$

C) $h(x) = 3$

D) $h(x) = -3$

12.

In the xy-plane, the graph of the linear function f contains the points (2,4) and (4,12). Which of the following defines f ?

A) $f(x) = 4x - 4$

B) $f(x) = 4x + 3.5$

C) $f(x) = \frac{1}{4}x - 4$

D) $f(x) = \frac{1}{4}x + 3.5$

13.

In the xy-plane, what is the slope of the line that passes through the points $(0, 0)$ and $(3, 4)$?

A) $\frac{3}{4}$

B) $\frac{4}{3}$

C) 3

D) 4

14.

What is the x-intercept of the graph of $2x + 4y = 24$ in the xy-plane?

A) $(12, 0)$

B) $(6, 0)$

C) $(4, 0)$

D) $(2, 0)$

15.

x	$d(x)$
1	6
2	3
3	0

For the linear function d, the given table shows several values of x and the corresponding values of $d(x)$. If $d(x) = mx + b$, where m and b are constants, what is the value of b ?

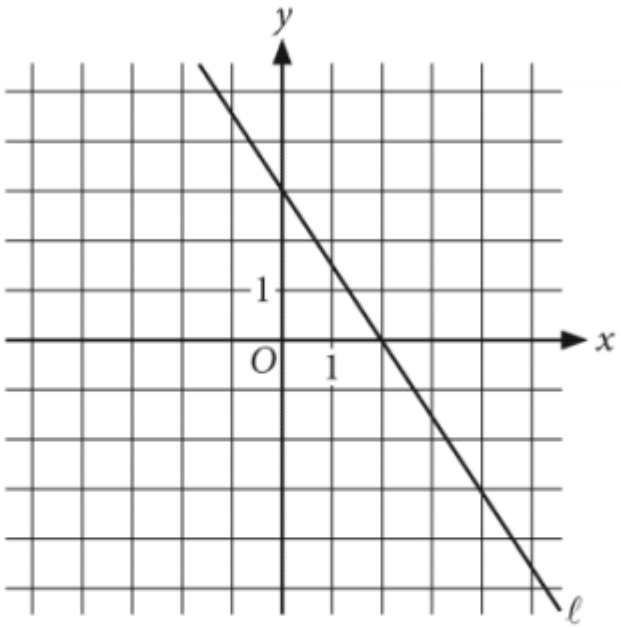
A) 3

B) 6

C) 9

D) 12

16.



Line ℓ is shown in the xy-plane above. Which of the following is an equation of line ℓ ?

A) $2x - 3y = 6$

B) $2x + 3y = 6$

C) $3x - 2y = 6$

D) $3x + 2y = 6$

17.

Which of the following is an equation of a line in the xy-plane that is parallel to the line with equation $2x+3y=18$?

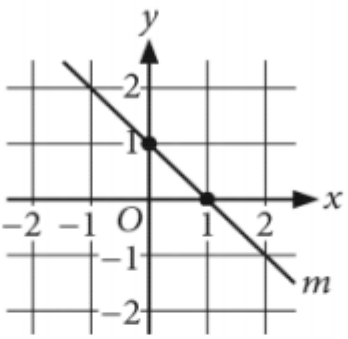
A) $2x + 3y = 12$

B) $2x - 3y = 10$

C) $3x + 2y = 9$

D) $3x - 2y = 4$

18.



Line m is shown in the xy-plane. Line k (not shown) is perpendicular to line m and also passes through $(1, 0)$. Which of the following is the slope of line k ?

A) -2

B) -1

C) 1

D) 2

19.

The graph of $y = f(x)$ is a line in the xy-plane that has a slope $\frac{3}{4}$. If $f(12) = 18$, which of the following functions could represent $f(x)$?

A) $f(x) = \frac{3}{2}x$

B) $f(x) = \frac{3}{2}x - 18$

C) $f(x) = \frac{3}{4}x + 9$

D) $f(x) = \frac{3}{4}x - \frac{3}{2}$

20.

Which of the following equations defines a line in the xy-plane that crosses the positive x-axis and the positive y-axis?

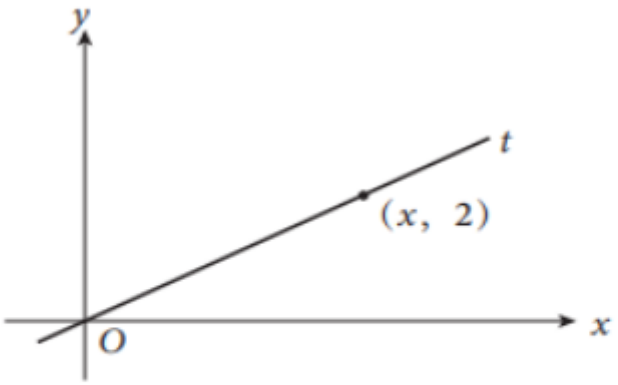
A) $8x + 12y = 24$

B) $6x - 4y = 18$

C) $2x - 3y = -6$

D) $-3x + 2y = 6$

21.



In the xy-plans above, line t passes through the origin and has a slope of $\frac{1}{2}$. What is the value of x?

22.

In the xy-plane, line ℓ passes through the point $(0, 0)$ and is parallel to the line represented by the equation $y = 4x + 2$. If line ℓ also passes through the point $(2, d)$, what is the value of d?

23.

In the xy-plane, line ℓ passes through the point $(-2, 1)$ and has slope $\frac{3}{2}$. Which of the following is an equation of line ℓ ?

A) $y=\frac{3}{2}x+4$

B) $y=\frac{3}{2}x+1$

C) $y=\frac{3}{2}x-\frac{7}{2}$

D) $y=-2x+\frac{3}{2}$

24.

The graph of a line in the xy-plane has a positive slope and intersects the y-axis at a point that has a negative y-coordinate. Which of the following could be an equation of the line?

A) $-3x+2y=-5$

B) $-3x+2y=5$

C) $3x+2y=-5$

D) $3x+2y=5$

25.

$$C(x)=7000+25x$$

A company uses the function above to estimate the cost $C(x)$, in dollars, to produce x units of a product. Based on the model, how many units of the product can the company produce at a cost of $25,000 ?

26.

In the xy-plane, what is the x-intercept of the line that has a slope of $-\frac{4}{3}$ and passes through the point $(0, 12)$?

A) -9

B) -4

C) 3

D) 9

27.

The graph of the equation $ax + ky = 6$ is a line in the xy-plane, where a and k are constants. If the line contains the points $(-2, -6)$ and $(0, -3)$, what is the value of k?

A) -2

B) -1

C) 2

D) 3

28.

Line k in the xy-plane passes through the points $(2, 5)$, $(-4, 8)$, and $\left(a, \frac{5}{2}\right)$, where a is a constant.

What is the value of a ?

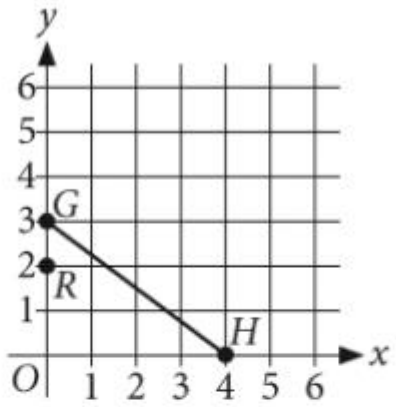
A) 5

B) 6

C) 7

D) 8

29.



Line segment GH and point R are shown in the xy-plane. If line ℓ (not shown) contains point R and is perpendicular to line segment GH, which of the following is an equation of line ℓ ?

A) $-4x + 3y = 6$

B) $-3x + 4y = 8$

C) $3x + 4y = 8$

D) $4x + 3y = 6$

30.

$$3x = 6y + 8$$

In the xy-plane, the graph of which of the following equations is perpendicular to the graph of the equation above?

A) $y = -2x + 10$

B) $y = -\frac{1}{3}x + 4$

C) $y = \frac{1}{2}x - 6$

D) $y = 2x - 5$