

SAMPLE PAGES FOR

The Competitive Edge Algebra I EOC Test ALGEBRA I END-OF-COURSE

J A N E H E R E F O R D

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21 || CHAPTER

LINEAR EQUATIONS

➤ *Equations as Relations*

A **solution** is an ordered pair that when substituted into an equation with two variables results in a true statement.

USING A REPLACEMENT SET

EXAMPLE

Find the solution set for $y = 3x + 2$. Use the replacement set $\{(-4, -3), (-3, 5), (2, 8)\}$.

x	y	$y = 3x + 2$	True/False
-4	-3	$-3 = 3(-4) + 2$ $-3 \neq -10$	False
-3	5	$5 = 3(-3) + 2$ $5 \neq -7$	False
2	8	$8 = 3(2) + 2$ $8 = 8$	True

Make a table and substitute each ordered pair into the equation.

$(2, 8)$ results in a true statement.

The solution set is $\{(2, 8)\}$.

USING A DOMAIN

EXAMPLE

Find the solution set for $w = t + 4$ if the domain is $\{-2, -1, 0, 1, 2\}$.

(*Remember that the domain is the letter that comes first in the alphabet!)

t	$t + 4$	w	(t,w)
-2	$-2 + 4$	2	$(-2, 2)$
-1	$-1 + 4$	3	$(-1, 3)$
0	$0 + 4$	4	$(0, 4)$
1	$1 + 4$	5	$(1, 5)$
2	$2 + 4$	6	$(2, 6)$

Make a table. t is the domain, so substitute each domain value for t into the equation to determine the values of the range (w).

The solution set is $\{(-2, 2), (-1, 3), (0, 4), (1, 5), (2, 6)\}$.

USING A SOLUTION SET TO SOLVE AND GRAPH

EXAMPLE

Solve $2a + 4b = -20$ if the domain is $\{-3, -2, -1, 0\}$. Graph the solution set.

$$2a + 4b = -20$$

Solve the equation for b in terms of a .

$$2a - 2a + 4b = -20 - 2a$$

Subtract $2a$ from each side.

$$4b = -20 - 2a$$

$$\frac{4b}{4} = \frac{-20 - 2a}{4}$$

$$b = -5 - \frac{1}{2}a$$

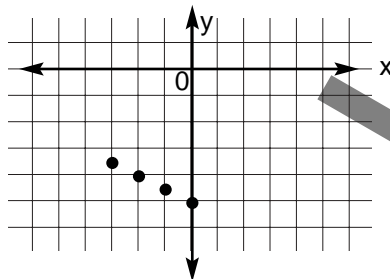
Simplify.
Divide each side by 4.

Simplify.

a	$-5 - \frac{1}{2}a$	b	(a, b)
-3	$-5 - \frac{1}{2}(-3)$	-3.5	(-3, -3.5)
-2	$-5 - \frac{1}{2}(-2)$	-4	(-2, -4)
-1	$-5 - \frac{1}{2}(-1)$	-4.5	(-1, -4.5)
0	$-5 - \frac{1}{2}(0)$	-5	(0, -5)

The solution set is $\{(-3, -3.5), (-2, -4), (-1, -4.5), (0, -5)\}$.

Graph the solution set.



➤ Graphing Linear Equations

An equation that is linear has a graph that is a straight line.

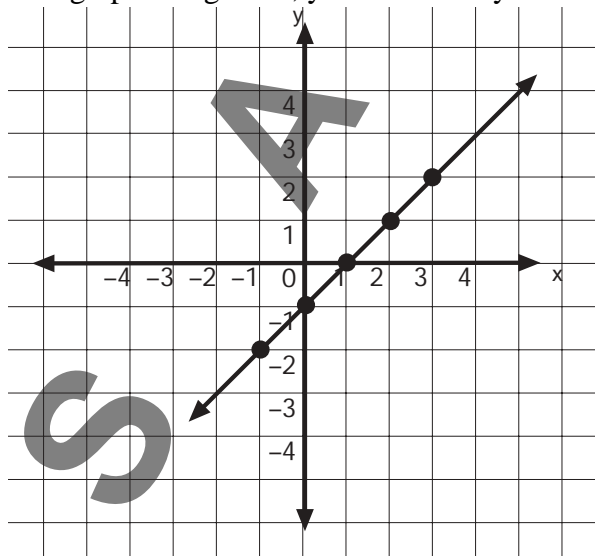
EXAMPLE

$$y = x - 1$$

x	$x - 1$	y
-1	$(-1) - 1$	-2
0	$(0) - 1$	-1
1	$(1) - 1$	0
2	$(2) - 1$	1
3	$(3) - 1$	2

Make a chart as shown on the left. Choose any 5 values for x (Smaller numbers are best.), then solve for y.

Now graph using the x, y columns for your ordered pairs.



Connect your points.

You have a straight line!

PRACTICE

Find the solution set for each equation given the replacement set.

1. $y = 4x + 5$
 $\{(-1, 0), (2, 13), (3, -15), 4, 21)\}$

2. $-2x + 3y = 3$
 $\{(0, 3), (1, 1), (2, -3), (3, 3)\}$

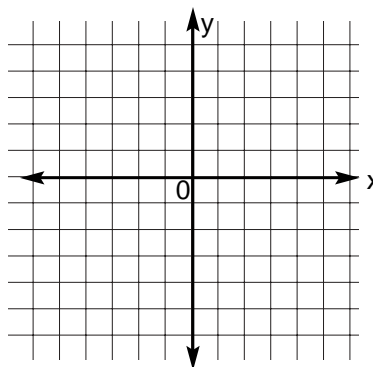
Solve each equation using the domain $\{-2, -1, 0, 1\}$.

3. $y = 4x - 3$

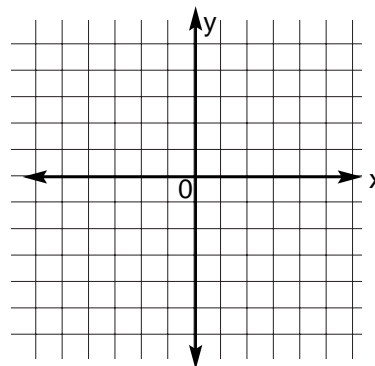
4. $2x + 3y = 15$

Solve each equation using the given domain. Graph the solution set.

5. $y = 4x$ domain = $\{-2, -1, 0, 1, 2, 3, 4\}$



6. $3y = 3x + 6$ domain = $\{-6, -4, -2, 0, 2, 4\}$



Choose 5 values for x .
Use the chart to find the values of y .

7. $y = 2x$

x	$2x$	y

11. $y = 5 - x$

x	$5 - x$	y

15. $y = 4 - \frac{1}{2}x$

x	$4 - \frac{1}{2}x$	y

8. $y = x - 1$

x	$x - 1$	y

12. $y = 4x - 2$

x	$4x - 2$	y

16. $y = 2x + 6$

x	$2x + 6$	y

9. $y = 3x + 1$

x	$3x + 1$	y

13. $y = 6 - 2x$

x	$6 - 2x$	y

17. $y = \frac{1}{4}x + 2$

x	$\frac{1}{4}x + 2$	y

10. $y = 2x - 1$

x	$2x - 1$	y

14. $y = x - 6$

x	$x - 6$	y

18. $y = x - \frac{1}{2}$

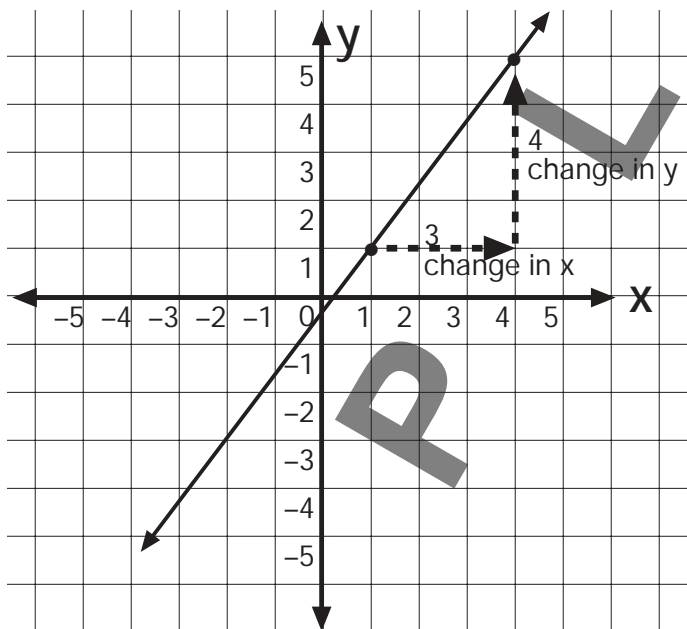
x	$x - \frac{1}{2}$	y

➤ Slope

Slope is the steepness of a line. It is expressed as the ratio of the change in y (vertical change) and the change in x (horizontal change) between any two points on the line.

$$\text{Slope} = \frac{\text{change in } y - \text{variable (vertical change)}}{\text{change in } x - \text{variable (horizontal change)}} \quad m = \frac{y_2 - y_1}{x_2 - x_1} \begin{matrix} \text{(rise)} \\ \text{(run)} \end{matrix}$$

EXAMPLES



The change in y is 4, and the change of x is 3. The slope of the line is $\frac{4}{3}$.

The slope of a line can also be determined from the coordinates of any two points on a line. It does not matter which point you define as (x_1, y_1) or (x_2, y_2) .

$$\text{Slope} = \frac{\text{difference of } y - \text{coordinate}}{\text{difference of } x - \text{coordinate}} \quad m = \frac{y_2 - y_1}{x_2 - x_1} \begin{matrix} \text{(rise)} \\ \text{(run)} \end{matrix}$$

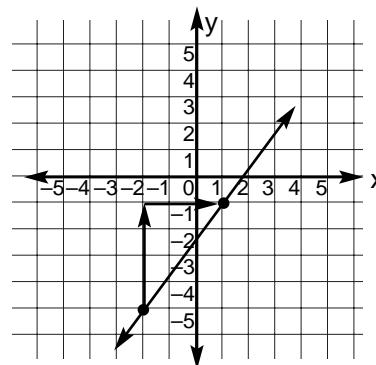
POSITIVE SLOPE

A graph of a line with a positive slope slopes up from left to right.

EXAMPLE

Find the slope of the line that contains points $(1, -1)$ and $(-2, -5)$.

$$m = \frac{y_2 - y_1}{x_2 - x_1} \begin{matrix} \text{(rise)} \\ \text{(run)} \end{matrix} \quad m = \frac{-1 - (-5)}{1 - (-2)} = \frac{4}{3}$$



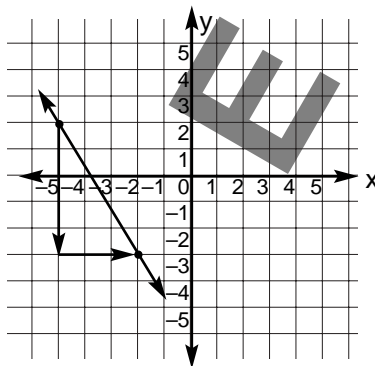
NEGATIVE SLOPE

A graph of a line with a negative slope, slopes down from left to right.

EXAMPLE

Find the slope of a line that contains points $(-2, -3)$ and $(-5, 2)$.

$$m = \frac{y_2 - y_1}{x_2 - x_1} \quad \left(\frac{\text{rise}}{\text{run}} \right) \quad m = \frac{2 - (-3)}{-5 - (-2)} = \frac{5}{-3}$$



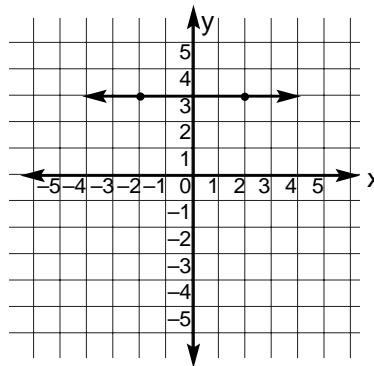
ZERO SLOPE

A graph of a line with a zero slope has a horizontal line.

EXAMPLE

Find the slope of a line that contains points $(2, 3)$ and $(-2, 3)$.

$$m = \frac{y_2 - y_1}{x_2 - x_1} \quad \left(\frac{\text{rise}}{\text{run}} \right) \quad m = \frac{3 - 3}{-2 - 2} = \frac{0}{-4} = 0$$



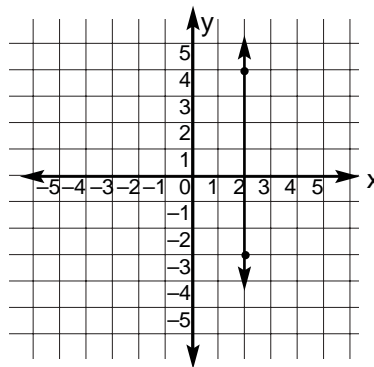
UNDEFINED SLOPE

The graph of a line with an undefined slope is a vertical line.

EXAMPLE

Find the slope of a line that contains points $(2, -3)$ and $(2, 4)$.

$$m = \frac{y_2 - y_1}{x_2 - x_1} \quad \left(\frac{\text{rise}}{\text{run}} \right) \quad m = \frac{4 - (-3)}{2 - 2} = \frac{7}{0}$$

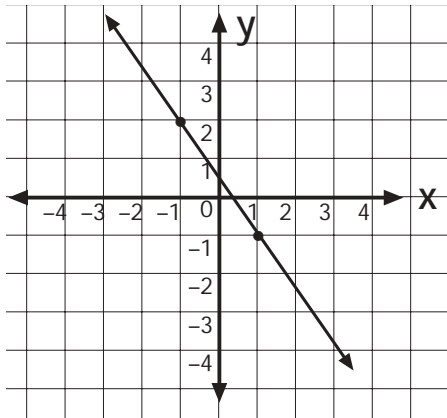


Division by zero is undefined, so the slope is also undefined.

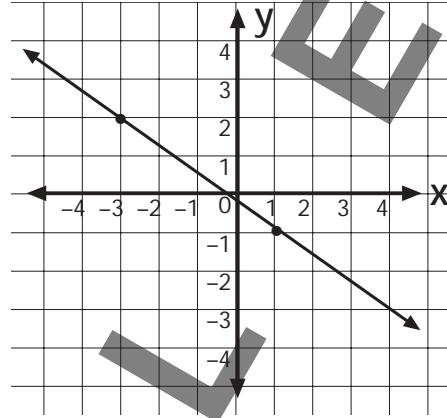
PRACTICE

Find the slope of each line. Determine if it's positive, negative, zero, or undefined.

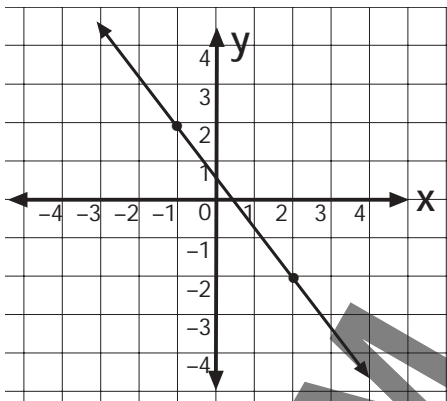
1.



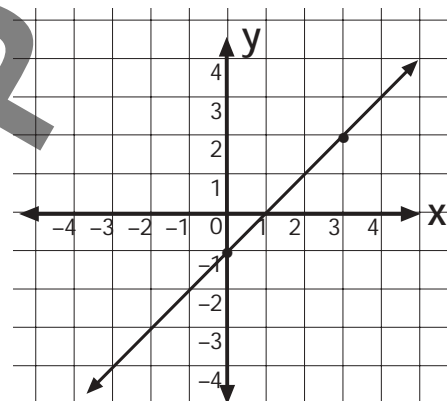
2.



3.



4.



S

A

Find the slope of the line that contains each pair of points.

Determine if it's positive, negative, zero or undefined.

5. A (2, 3), B (-1, 6) _____

6. C (5, -2), D (4, -3) _____

7. E (0, 8), F (2, 1) _____

8. G (-3, 1), H (4, 5) _____

9. I (-1, 1), J (3, -4) _____

10. K (4, 1), L (3, -2) _____

11. M (-4, -4), N, (-4, 2) _____

12. O (-3, 7), P (1, -2) _____

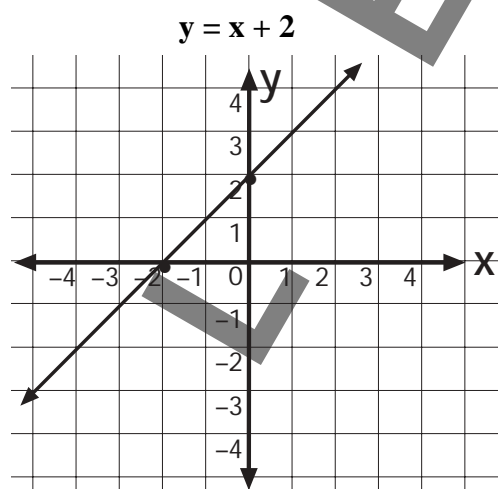
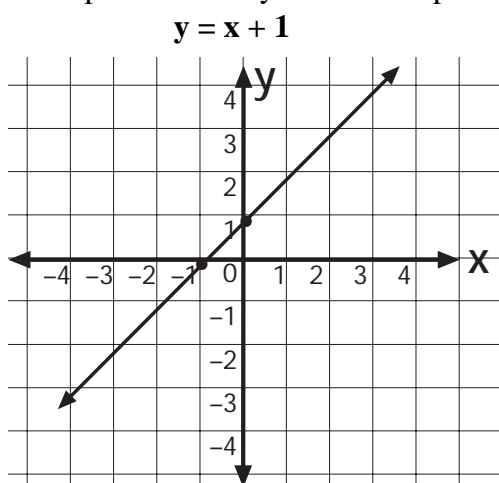
13. Q (0, -6), R (2, -5) _____

14. S (-5, 1), T (3, 1) _____

15. U (5, 3), V (-1, 1) _____

➤ Intercepts

Points of intersection can be used to graph a line. Each line below intercepts the x-axis in one point and the y-axis in one point.



Equation	Point of intersection y-axis	y-intercept	Point of intersection x-axis	x-intercept
$y = x + 1$	(0, 1)	1	(-1, 0)	-1
$y = x + 2$	(0, 2)	2	(-2, 0)	-2

EXAMPLE

Find the x-intercept and y-intercept for $y = x + 9$.

- Find the x-intercept.

Let $y = 0$ and solve for x .

$$0 = x + 9$$

$$-9 = x$$

The x-intercept is -9 .

The ordered pair is $(-9, 0)$.

- Find the y-intercept.

Let $x = 0$ and solve for y .

$$y = 0 + 9$$

$$y = 9$$

The y-intercept is 9 .

The ordered pair is $(0, 9)$.

S

PRACTICE

Find the x-intercept and y-intercept for each equation.

1. $y = 7x - 2$

9. $y = 3x + 1$

2. $y = 4 + x$

10. $y = x - 3$

3. $y = \frac{x}{2} - 5$

11. $y = x - 8$

4. $y = 3x + 5$

12. $y = 5x + 6$

5. $y = 5 + 2x$

13. $y = 2x - 3$

6. $y = x - 2$

14. $y = x + 1$

7. $y = x + 3$

15. $y = 3x - 1$

8. $y = \frac{x}{4} - 2$

➤ *Slope-Intercept Form*

$y = mx + b$ is called the slope intercept form, where m is the slope, and b is the y -intercept.

IDENTIFYING SLOPE AND Y-INTERCEPT

EXAMPLE

Find the slope and y -intercept.

Slope intercept form: $y = \mathbf{m}x + \mathbf{b}$
slope y -intercept

Equation: $y = \frac{1}{3}x + 4$

$m = \frac{1}{3}$ $b = 4$

slope = $\frac{1}{3}$ y -intercept = 4

WRITING AN EQUATION IN SLOPE-INTERCEPT FORM

EXAMPLE

Write $y - 4 = \frac{1}{4}(x + 2)$ in slope-intercept form. ($y = mx + b$)

$y - 4 = \frac{1}{4}(x + 2)$ Solve for y .

$y - 4 = \frac{1}{4}x + \frac{1}{2}$ Multiply $\frac{1}{4}(x + \frac{1}{2})$.

$y - 4 + 4 = \frac{1}{4}x + \frac{1}{2} + 4$ Add 4 to each side.

$y = \frac{1}{4}x + 4\frac{1}{2}$ Simplify.

The equation in slope-intercept form ($y = mx + b$) is $y = \frac{1}{4}x + 4\frac{1}{2}$.

WRITING AN EQUATION USING SLOPE AND Y-INTERCEPT

EXAMPLE

Write an equation of the line with slope $\frac{3}{4}$ and y -intercept 8.

$y = mx + b$ (slope-intercept form)

Substitute $\frac{3}{4}$ for m and 8 for b .

$y = \frac{3}{4}x + 8$ is the equation in slope-intercept form.



WRITING AN EQUATION FROM A GRAPH

EXAMPLE

Write the equation for the line in the graph.

Find the slope when two points on a line are (2, 2) and (0, 4).

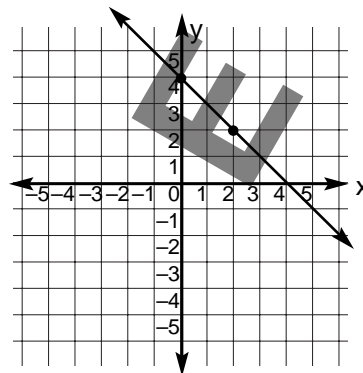
$$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1} \left(\frac{\text{rise}}{\text{run}} \right) = \frac{4 - 2}{0 - 2} = \frac{2}{-2} = -1$$

The slope is -1 .

The y-intercept is 4 because the line crosses the x-axis at (0, 4).

$y = mx + b$ (slope-intercept form)

$y = -x + 4$ is the equation for this line in slope-intercept form.



EXAMPLE

Write the equation for the line in the graph.

The line on the graph has a slope (m) of 4 and passes through (4, -2).

$y = mx + b$ (slope-intercept form)

$$-2 = 4(4) + b$$

Replace m with 4, y with -2 and x with 4.

$$-2 = 16 + b$$

Multiply.

$$-2 + 2 = 16 + b + 2$$

Add 2 to each side.

$$0 = b + 18$$

$$0 - 18 = b + 18 - 18$$

Subtract 18 from each side.

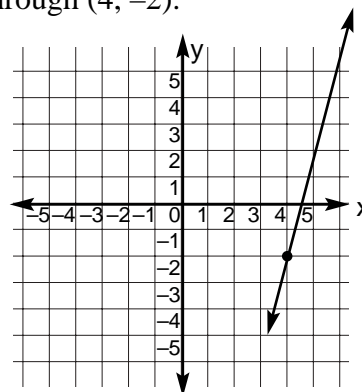
$$-18 = b$$

Simplify.

Now write the equation in slope-intercept form.

$y = mx + b$ (slope-intercept form)

$y = 4x - 18$ Replace m with 4 and b with -18 .



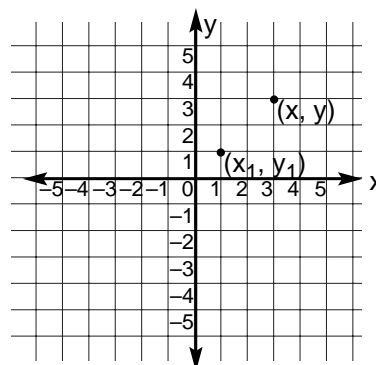
WRITING EQUATIONS IN POINT-SLOPE FORM

The point-slope form is an equation made by using the coordinates of a known point and the slope of the line.

linear equation in point-slope form $y - y_1 = m(x - x_1)$

(x_1, y_1) = given point

m = slope of the line



WRITING AN EQUATION USING SLOPE AND POINT

EXAMPLE

Write the point-slope form of an equation for a line that passes through $(-3, 2)$ with a slope -2 .

$$y - y_1 = m(x - x_1) \quad (\text{point-slope form})$$

$$y - 2 = -2[x - (-3)] \quad (x_1, y_1) = (-3, 2)$$

$$y - 2 = -2(x + 3) \quad \text{Simplify.}$$

The equation is $y - 2 = -2(x + 3)$.

WRITING AN EQUATION OF A HORIZONTAL LINE

EXAMPLE

Write the point-slope form of an equation for a horizontal line that passes through $(4, -4)$.

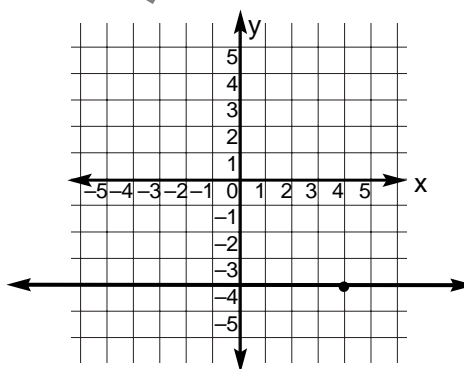
(Slope = 0 since it is a horizontal line.)

$$y - y_1 = m(x - x_1) \quad (\text{point-slope form})$$

$$y - (-4) = 0(x - 4) \quad (x_1, y_1) = (4, -4)$$

$$y + 4 = 0 \quad \text{Simplify.}$$

The equation is $y + 4 = 0$.



Vertical lines cannot be written in point-slope form since their slope is undefined.

WRITING AN EQUATION IN STANDARD FORM

Write $y + 6 = -\frac{3}{4}(x - 3)$ in standard form. In standard form, all variables are on the left side of the equation.

$$y + 6 = -\frac{3}{4}(x - 3)$$

$$4(y + 6) = 4\left(-\frac{3}{4}\right)(x - 3) \quad \text{Multiply each side by 4.}$$

$$4y + 24 = -3(x - 3) \quad \text{Use distributive property.}$$

$$4y + 24 = -3x + 9 \quad \text{Use distributive property.}$$

$$4y + 24 - 24 = -3x + 9 - 24 \quad \text{Subtract 24 from each side.}$$

$$4y = -3x - 15 \quad \text{Simplify.}$$

$$4y + 3x = -3x - 15 + 3x \quad \text{Add 3x to each side.}$$

$$3x + 4y = -15 \quad \text{Simplify.}$$

The standard form of the equation is $3x + 4y = -15$.



➤ Graphing an Equation

EXAMPLE

Graph $y = \frac{1}{2}x - 2$ ($y = mx + b$)

slope = $\frac{1}{2}$ y-intercept = -2

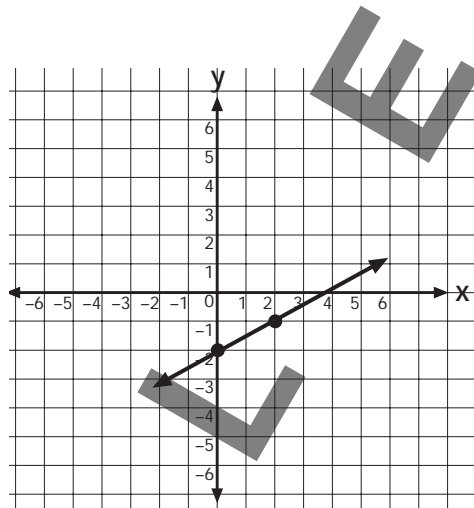
Graph the y-intercept $(0, -2)$.

Find a second point by using the slope.

1 change in y, up 1 unit

2 change in x, right 2 units

Second point $(2, -1)$



PRACTICE

State the slope and y-intercept for each.

1. $y = \frac{1}{3}x + 4$

4. $y = 2x + 1$

2. $y = -4x - 2$

5. $y = \frac{1}{2}x + 2$

3. $y = \frac{3}{8}x - \frac{1}{2}$

6. $y = -x + 15$

Write an equation for each.

7. slope = 1 y-intercept = 3

10. slope = $-\frac{1}{5}$ y-intercept = 7

8. slope = 3 y-intercept = -5

11. slope = 3 y-intercept = 2

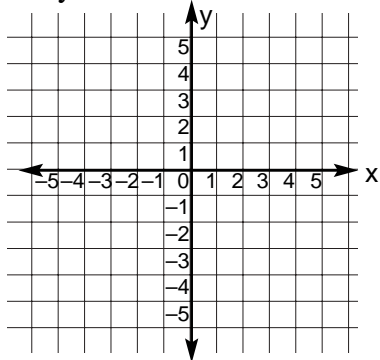
9. slope = $-\frac{1}{8}$ y-intercept = -3

12. slope = -1 y-intercept = 4

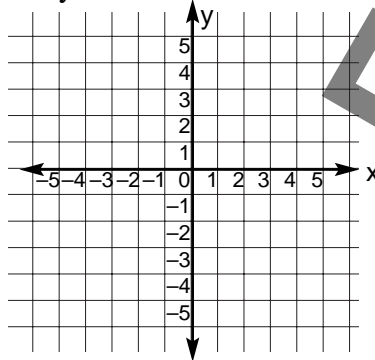
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Graph each equation using the slope and y-intercept.

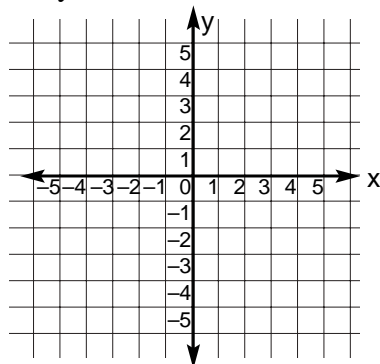
13. $y = \frac{2}{3}x - 4$



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



14. $y = -3x + 2$



Graph the line for each set of points.
Write an equation in slope-intercept form from each graph.

16. $(1, 0)$ $(3, -1)$

17. $(0, 1)$ $(3, 2)$

18. Write the point-slope form of an equation for a line that passes through $(4, 9)$, $m = 2$.

19. Write the point-slope form of an equation for a line that passes through $(-5, 0)$, $m = -4$.

20. Write the point-slope form of an equation for a line that passes through $(7, -4)$, $m = \frac{3}{4}$.

21. Write the point-slope form of an equation for a horizontal line that passes through $(6, -8)$.

22. Write the point-slope form of an equation for a horizontal line that passes through $(1, 8)$.

Write each equation in standard form.

23. $y - 4 = -3(x + 2)$

25. $y + 3 = -\frac{1}{2}(x - 11)$

24. $y - 2 = -\frac{4}{5}(x - 2)$

26. $y + 6 = \frac{1}{6}(x - 3)$

➤ *Parallel and Perpendicular Lines*

PARALLEL LINES

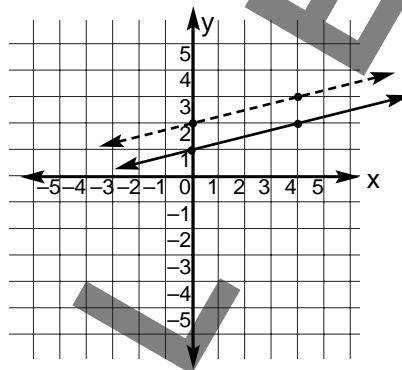
Parallel lines are lines that are in the same plane that never intersect.

The equation of the broken line is $y = \frac{1}{4}x + 2$.

The equation of the solid line is $y = \frac{1}{4}x + 1$.

Same slope $\Rightarrow \frac{1}{4}$

Different y-intercepts $\Rightarrow 2$ and 1



Non-vertical lines are parallel if they have the same slopes but different y-intercepts.
All vertical lines are parallel.

ARE THESE LINES PARALLEL?

EXAMPLE

Are the graphs of $y = -\frac{1}{6}x + 3$ and $2x + 12y = 24$ parallel?

$y = -\frac{1}{6}x + 3$ is in slope-intercept form ($y = mx + b$).

$2x + 12y = 24$ You must change this into slope-intercept form.

$$2x - 2x + 12y = -2x + 24$$

Subtract $2x$ from each side.

$$12y = -2x + 24$$

Simplify.

$$\frac{12y}{12} = \frac{-2x + 24}{12}$$

Divide each side by 12 .

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

Simplify.

These lines are parallel because both equations ($y = -\frac{1}{6}x + 3$ and $y = -\frac{1}{6}x + 2$) have the same slope ($-\frac{1}{6}$) and different y-intercepts (3 and 2).

WRITING EQUATIONS FOR PARALLEL LINES

EXAMPLE

Write an equation in slope-intercept form for the line that contains $(8, 2)$ and is parallel to $y = \frac{1}{2}x - 1$. (To be parallel lines, the lines must have the same slope.)

$$y - y_1 = m(x - x_1) \quad \text{Point-slope form}$$

$$y - 2 = \frac{1}{2}(x - 8)$$

Replace m with $\frac{1}{2}$, x_1 with 8 and y_1 with 2 .

$$y - 2 = \frac{1}{2}x - 4$$

Use distributive property.

$$y - 2 + 2 = \frac{1}{2}x - 4 + 2$$

Add 2 to each side.

$$y = \frac{1}{2}x - 2$$

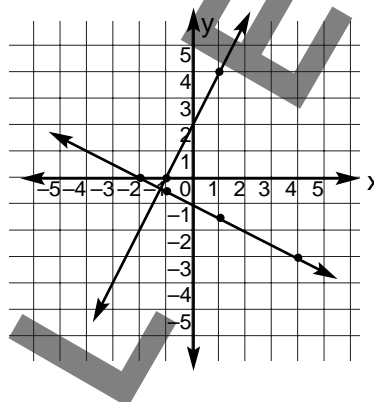
Simplify.

$y = \frac{1}{2}x - 2$ is the equation in slope-intercept form.

PERPENDICULAR LINES

Perpendicular lines are two lines that intersect to form right angles. The product of their slopes is -1 .

The graph shows the intersection of two lines ($y = -\frac{1}{2}x - 1$ and $y = 2x + 2$) that are perpendicular. The slope of $y = -\frac{1}{2}x - 1$ is $-\frac{1}{2}$. The slope of $y = 2x + 2$ is 2 . Since $-\frac{1}{2} \cdot 2 = -1$, the graphs of the two equations are perpendicular.



If the product of two numbers is -1 , then one number is the negative-reciprocal of the other.

EXAMPLES

$$-\frac{3}{4} \quad -\frac{3}{4} \cdot \frac{4}{3} = -1 \quad \frac{4}{3} \text{ is the negative reciprocal of } -\frac{3}{4}.$$

$$\frac{5}{3} \quad \frac{5}{3} \cdot -\frac{3}{5} = -1 \quad -\frac{3}{5} \text{ is the negative reciprocal of } \frac{5}{3}.$$

WRITING EQUATIONS FOR PERPENDICULAR LINES

EXAMPLE

Find the slope-intercept form for an equation of a line containing $(1, -1)$ and that is perpendicular to $y = 4x + 2$.

$$y = mx + b \text{ (slope-intercept form)}$$

$$\text{slope} = m = 4$$

$$\text{negative reciprocal of slope} = -\frac{1}{4}$$

Now use the point-slope form to find the equation.

$$y - y_1 = m(x - x_1) \quad \text{(point-slope form)}$$

$$y - (-1) = -\frac{1}{4}(x - 1) \quad (x_1, y_1) = (1, -1), m = -\frac{1}{4}$$

$$y + 1 = -\frac{1}{4}x + \frac{1}{4} \quad \text{Use distributive property.}$$

$$y + 1 - 1 = -\frac{1}{4}x + \frac{1}{4} - 1 \quad \text{Subtract 1 from each side.}$$

$$y = -\frac{1}{4}x - \frac{3}{4} \quad \text{Simplify.}$$

The equation is $y = -\frac{1}{4}x - \frac{3}{4}$.

PRACTICE

Are the graphs of the lines in each pair parallel?

1. $y = 3x$
 $-21x + 7y = 14$ _____

2. $y = -\frac{1}{3}x + 3$
 $-x - 3y = 6$ _____

3. $y = \frac{1}{4}x + 2$
 $24x + 3y = 12$ _____

Write an equation in slope-intercept form for the line that is parallel to the line given and that passes through the point given.

4. $y = 4x + 3$ (1, 1)

5. $y = \frac{1}{4}x + 3$ (-3, -5)

6. $y = -3x + 2$ (-4, 6)

Write an equation in slope-intercept form for the line that is perpendicular to the line given and that passes through the point given.

7. $y = 3x + 4$ (2, 2)

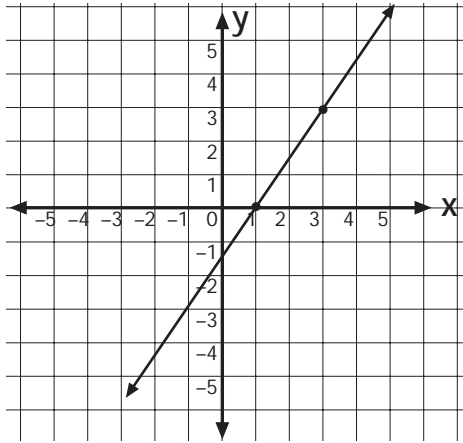
8. $y = x - 2$ (5, 7)

9. $3x - 2y = 8$ (7, -3)

10. $-9x + 7y = 2$ (14, 11)

➤ Review

1. What is the slope of this line?



- a. $\frac{2}{3}$
 b. $\frac{1}{1}$
 c. $\frac{3}{2}$
 d. $\frac{2}{4}$

2. Find the x-intercept of $y = x + 4.5$.

- a. (4.5, 0)
 b. (0, 4.5)
 c. (0, -4.5)
 d. (-4.5, 0)

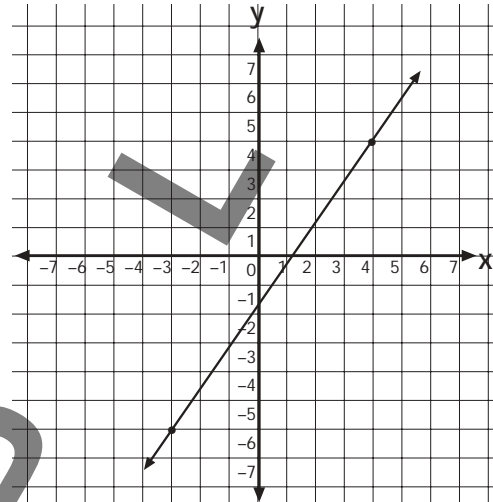
3. Find the slope of the line that contains A (2, 5), B (0, 1).

- a. $\frac{2}{1}$
 b. $\frac{1}{2}$
 c. $\frac{3}{1}$
 d. $\frac{1}{3}$

4. Find the y-intercept of $y = 2x + 3$.

- a. (3, 0)
 b. (0, 5)
 c. (5, 0)
 d. (0, 3)

5. Find the slope of this line.



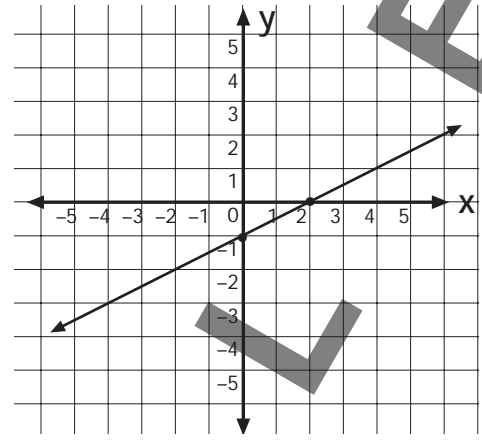
- a. $\frac{7}{10}$
 b. $\frac{3}{2}$
 c. $\frac{10}{7}$
 d. $\frac{2}{3}$

6. Find the slope of the line that contains x (3, 3.5), y (5, 5.5).

- a. $\frac{1}{1}$
 b. $\frac{2.5}{2}$
 c. $\frac{1}{2.5}$
 d. $\frac{2}{2.5}$

7. Find the x-intercept of $y = 3x - 2$.
- $(0, \frac{2}{3})$
 - $(-2, 0)$
 - $(\frac{2}{3}, 0)$
 - $(0, -2)$
8. Find the y-intercept of $y = 2x - 1$.
- $(-1, 0)$
 - $(\frac{1}{2}, 0)$
 - $(0, \frac{1}{2})$
 - $(0, -1)$
9. Which of the following is the correct slope for C (3, 2), D (9, 1)?
- $\frac{-6}{1}$
 - $\frac{4}{1}$
 - $\frac{1}{-4}$
 - $\frac{1}{-6}$
10. Which of the following has (3, 0) as the x-intercept?
- $y = x - 3$
 - $y = x + 3$
 - $y = 2x + 3$
 - $y = x - 5$
11. Which of the following has (0, 2) as the y-intercept?
- $y = x - 2$
 - $y = 2x + 1$
 - $y = x + 2$
 - $y = 2x - 1$

12. What is the slope of this line?

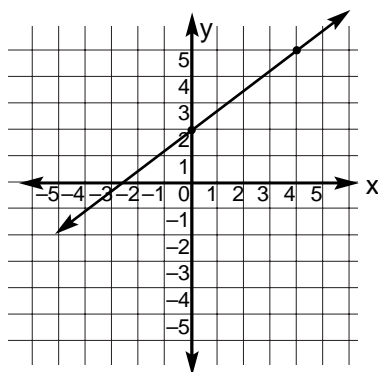


- $\frac{2}{1}$
 - $\frac{1}{2}$
 - $-\frac{1}{2}$
 - $-\frac{2}{1}$
13. Solve.
- $$y = -2x + 4$$
- $$y = -2x + 4$$
- $(-2, -1)$
 - $(2, 1)$
 - no solution
 - $(-2, 1)$
14. Is (1, 3) the ordered pair of the system of equations?
- $$y = x + 2$$
- $$y = 3x$$
- yes
 - no

15. State the equation of a line with a slope of $\frac{1}{9}$ and a y-intercept of 4.

- a. $y = 9x - 4$
- b. $y = -\frac{1}{9}x + 4$
- c. $y = \frac{1}{9}x + 4$
- d. $y = -\frac{1}{9}x - 4$

16. Write the slope-intercept form of the equation for this line.



- a. $y = -\frac{3}{4}x + 2$
- b. $y = -\frac{3}{4}x - 2$
- c. $y = \frac{3}{4}x + 2$
- d. $y = \frac{3}{4}x - 2$

17. State the slope for $y = \frac{2}{3}x - 5$.

- a. -5
- b. $\frac{2}{3}$
- c. 3
- d. $\frac{2}{3}x - 5$

18. State the y-intercept for $y = 2x + 4$.

- a. 4
- b. 2
- c. $2x + 4$
- d. 1

19. Write the slope-intercept form of $y = x - 2$ that passes through $(2, -7)$ and is parallel to the graph of the equation.

- a. $y = \frac{1}{2}x + 2$
- b. $y = -x + 9$
- c. $y = -\frac{1}{2}x - 2$
- d. $y = x - 9$

20. Write the slope-intercept form of $3y + 7 = 2x$ that passes through $(3, -3)$ and is perpendicular to the graph of the equation.

- a. $y = -\frac{2}{3}x + 1\frac{1}{2}$
- b. $y = -\frac{3}{2}x + 1\frac{1}{2}$
- c. $y = \frac{1}{3}x + 2\frac{1}{2}$
- d. $y = 3x + 5$

21. $3y = 2x - 2$
 $2x - 3y = 2$

Is the graph of the equation perpendicular, parallel, vertical lines or neither?

- a. parallel
- b. perpendicular
- c. neither
- d. vertical lines

22. $y = 5x$
 $y = -5x + 7$

Is the graph of the equation perpendicular, parallel, vertical lines or neither?

- a. perpendicular
- b. parallel
- c. neither
- d. vertical lines