BELLWORK

In slope-intercept form, write the equation of the line that contains the points in the table.

x	−8	−4	4	8
y	−5	−3.5	−0.5	1

First, find the slope. Let (x_1, y_1) be $(-8, -5)$ and (x_2, y_2) be $(8, 1)$.

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1-(-5)}{8-(-8)} = \frac{6}{16} = \frac{3}{8}$$

Next, choose a point, and use either form of the equation of a line.

Example 3 Continued

Method A Point-Slope Form

Using (8, 1):

$y - y_1 = m(x - x_1)$

$y - (1) = \frac{3}{8}(x - 8)$ *Substitute.*

$y - 1 = \frac{3}{8}(x - 8)$ *Simplify.*

Rewrite in slope-intercept form.

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

$y = \frac{3}{8}x - 2$ *Solve for y.*

Write the equation that represents the situation in the table.

Selling Price ($)	Rent ($)
75	9
90	12
160	26
250	44

X – selling price
Y – rent

Objectives

Graph lines and write equations given a graph.

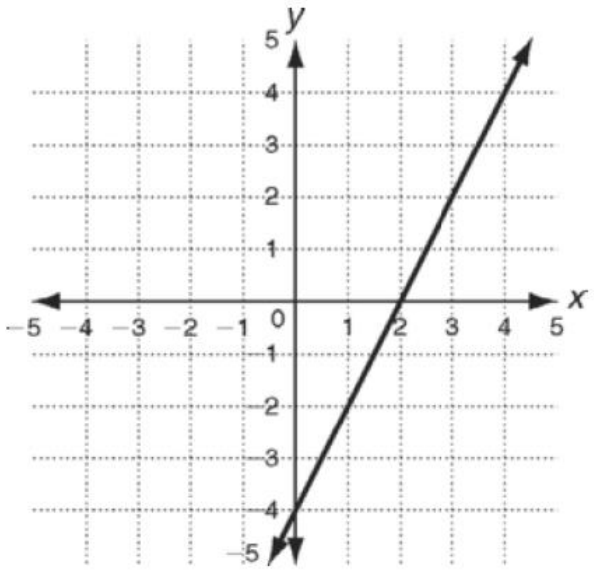
3-6 Lines in the Coordinate Plane

Write the equation of each line in slope-intercept form.

1) Find y – intercept and slope

2) Plug these numbers into y = mx + b

1.



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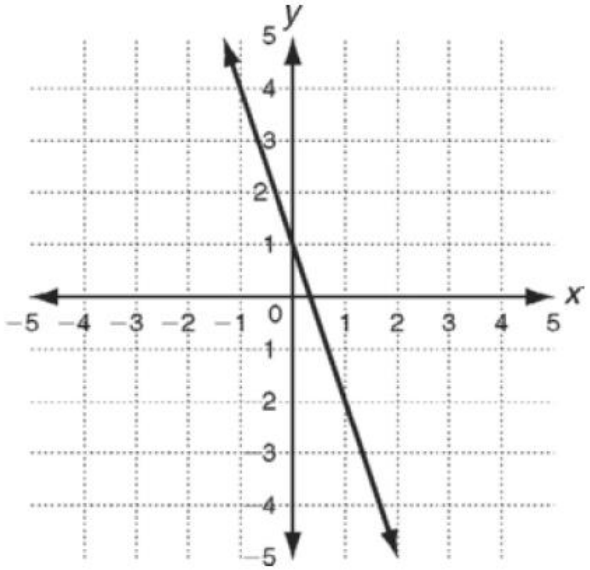

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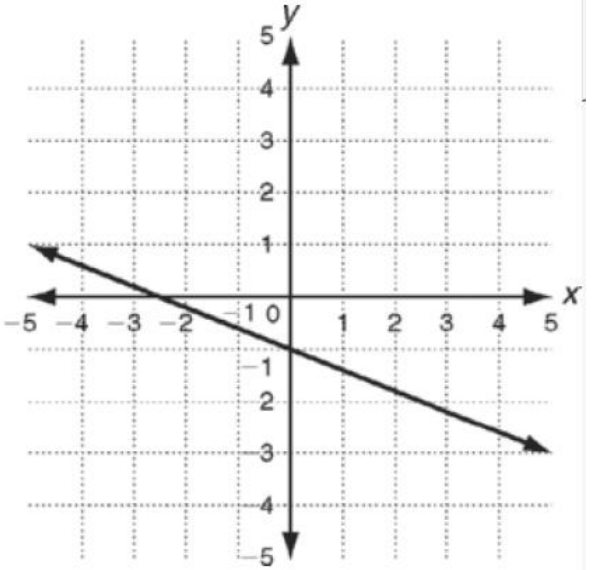
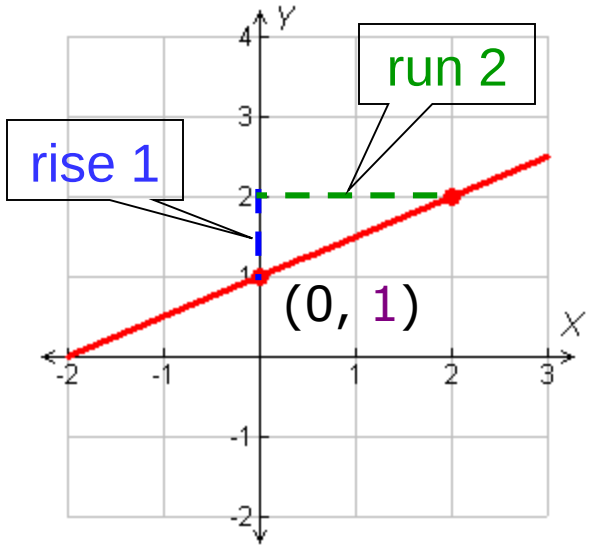


Example 2A: Graphing Lines

Graph each line.

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

The equation is given in the slope-intercept form, with a slope of $\frac{1}{2}$ and a y-intercept of 1. Plot the point (0, 1) and then rise 1 and run 2 to find another point. Draw the line containing the points.

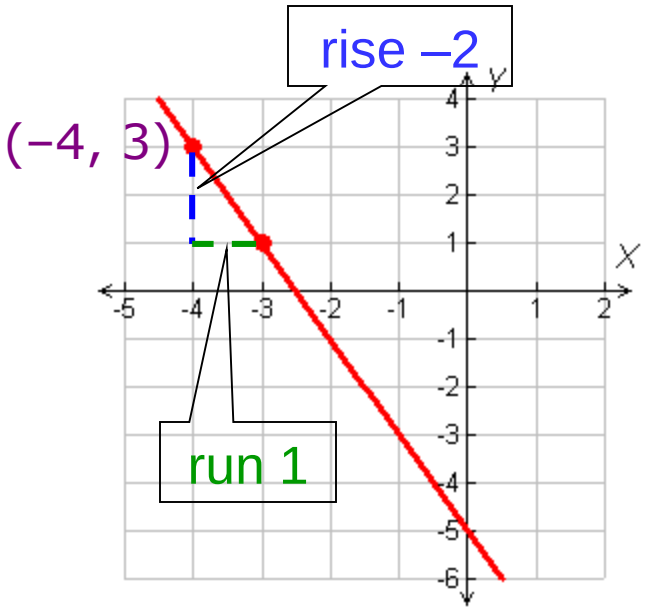


Example 2B: Graphing Lines

Graph each line.

$y = -2x - 5$

The equation is given in the point-slope form, with a slope of $\frac{-2}{1}$ through the point (–4, 3). Plot the point (–4, 3) and then rise –2 and run 1 to find another point. Draw the line containing the points.

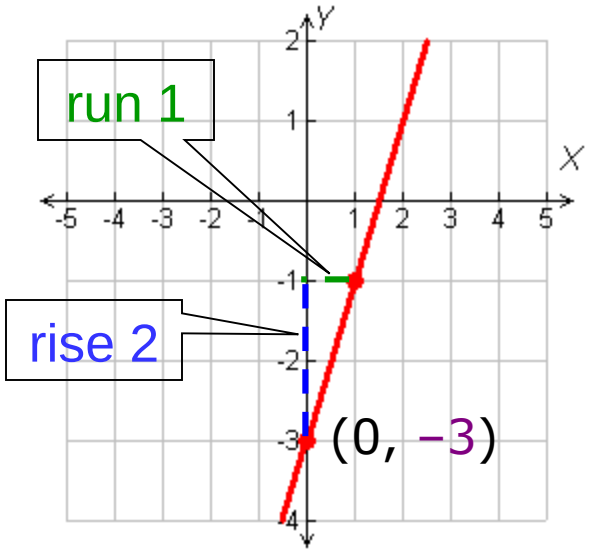


Check It Out! Example 2a

Graph each line.

$y = 2x - 3$

The equation is given in the slope-intercept form, with a slope of $\frac{2}{1}$ and a y-intercept of -3. Plot the point $(0, -3)$ and then rise 2 and run 1 to find another point. Draw the line containing the points.

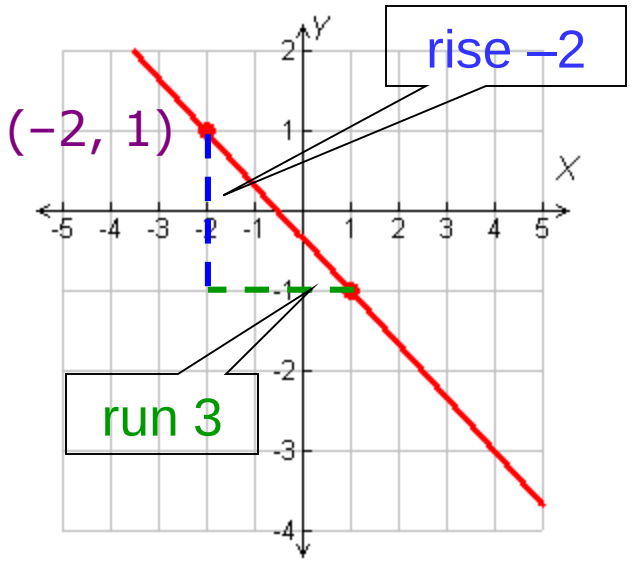


Check It Out! Example 2b

Graph each line.

$$y = (-2/3)x - 1$$

The equation is given in the point-slope form, with a slope of $\frac{-2}{3}$ through the point (–2, 1). Plot the point (–2, 1)and then rise –2 and run 3 to find another point. Draw the line containing the points.



Horizontal Lines

Vertical Lines

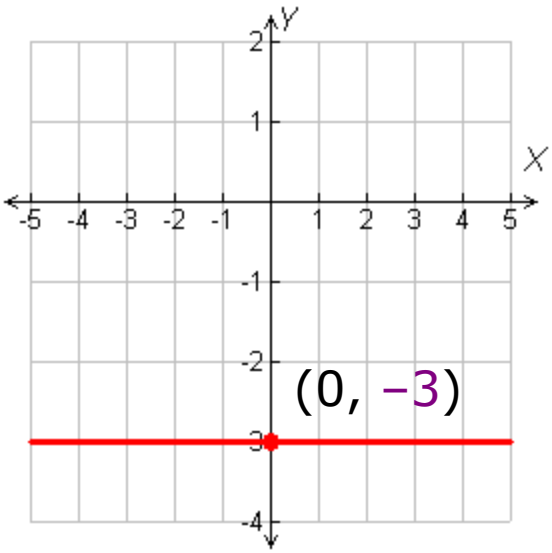
Example 2C: Graphing Lines

Graph each line.

$y = -3$

The equation is given in the form of a horizontal line with a y-intercept of -3.

The equation tells you that the y-coordinate of every point on the line is -3. Draw the horizontal line through $(0, -3)$.

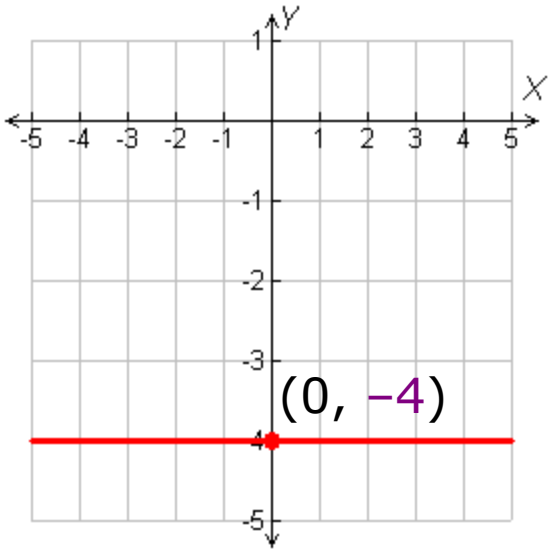


Check It Out! Example 2c

Graph each line.

***y* = –4**

The equation is given in the form of a horizontal line with a *y*-intercept of –4.



The equation tells you that the y-coordinate of every point on the line is –4. Draw the horizontal line through (0, –4).

WORKSHEET 3.6B