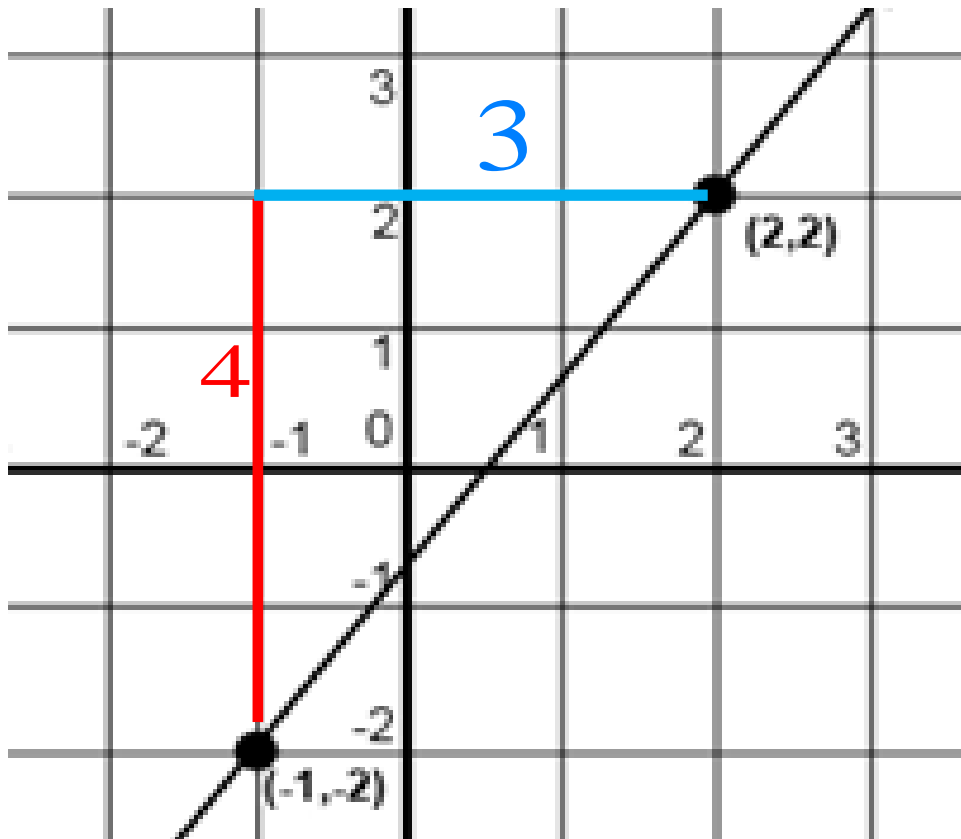


Chapter 4 Introduction

Slope and Graphing Review

I. Find the Slope Using the Points on a Graph



$$\frac{\text{rise}}{\text{run}} = \frac{4}{3}$$

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

- Start with the point on the far left.
- Go up 4 units (+).
- Go right 3 units (+).
- What happens if you start with the point on the far right?

II. Find the Slope Using Two Points

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

a. $(2, 3), (4, -6)$

$$\frac{-6 - 3}{4 - 2} = \frac{-9}{2}$$

$$m = -\frac{9}{2}$$

b. $(-2, -3), (-4, -6)$

$$\frac{-6 - (-3)}{-4 - (-2)} = \frac{-3}{-2}$$

$$m = \frac{3}{2}$$

III. Find the Rate of Change From the Data Table

# of Days x	Charge y
1	\$10.00
2	\$20.00
5	\$50.00

- Pick any 2 days and their corresponding charges.
- Write them as coordinates.
- Use the slope formula to find the rate of change.

$(1, 10)$ & $(5, 50)$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\frac{50 - 10}{5 - 1} = 10$$

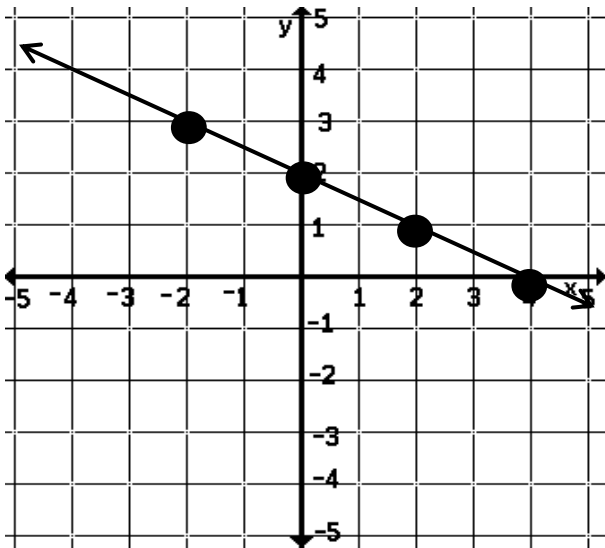
$\$10 / \text{day}$ is your rate

IV. Write an Equation in Slope-Intercept Form. Then Graph It.

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

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

$$m = \underline{-\frac{1}{2}} \quad b = \underline{2}$$

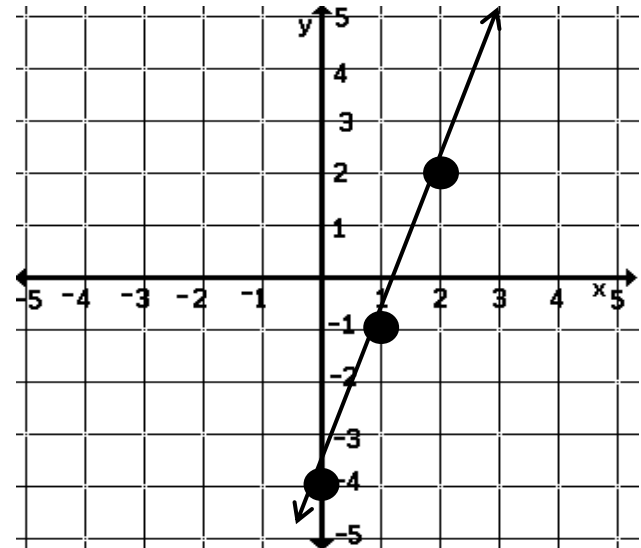


2. $-2y = 2(4 - 3x)$

$$-2y = 8 - 6x$$

$$y = -4 + 3x \text{ or } y = 3x - 4$$

$$m = \underline{3} \quad b = \underline{-4}$$

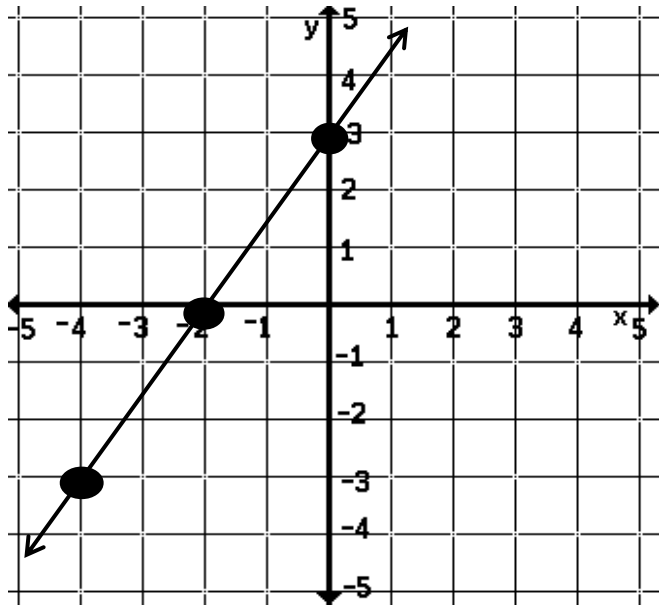


$$3. \quad 2y - 6 = 3x$$

$$2y = 3x + 6$$

$$y = \frac{3}{2}x + 3$$

$$m = \underline{\frac{3}{2}} \quad b = \underline{3}$$

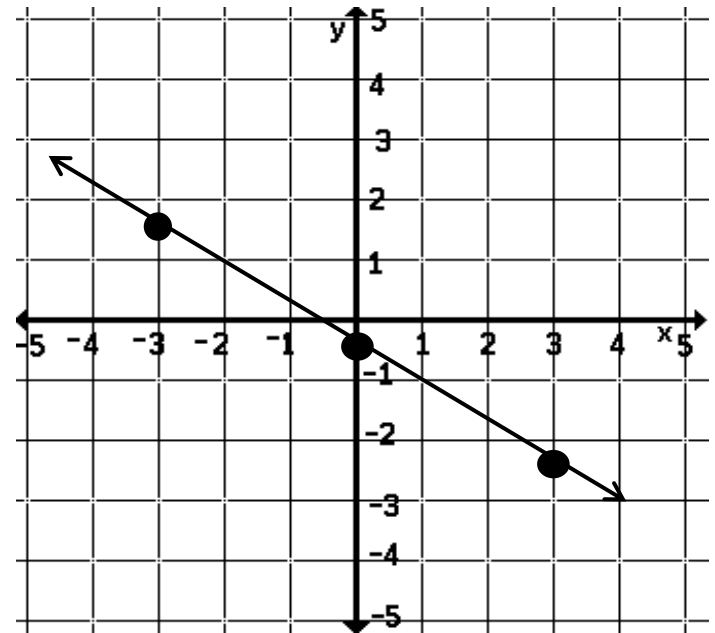


$$4. \quad 4x + 3y = 2x - 1$$

$$3y = -2x - 1$$

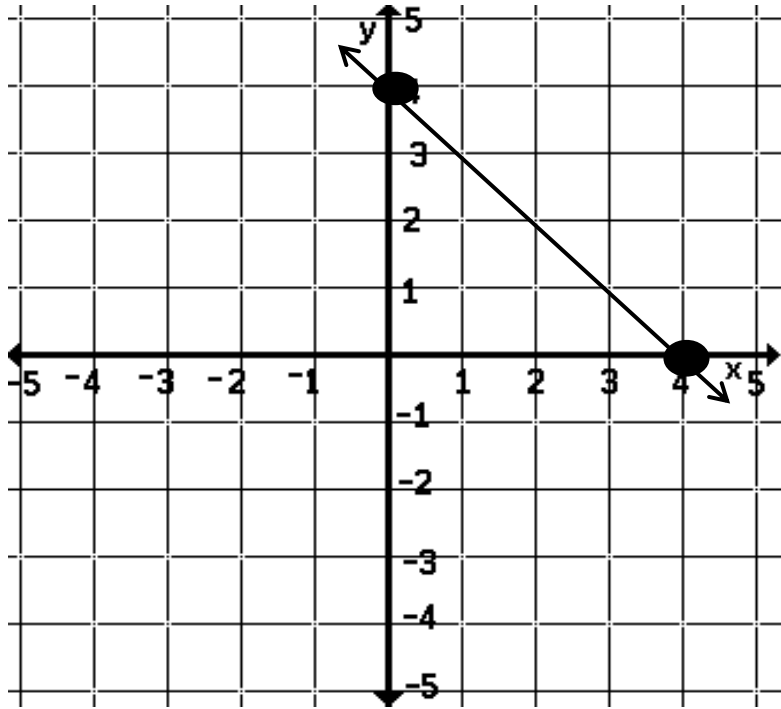
$$y = -\frac{2}{3}x - \frac{1}{3}$$

$$m = \underline{-\frac{2}{3}} \quad b = \underline{-\frac{1}{3}}$$



V. Write an Equation in Slope-Intercept Form Using the Graph

a.



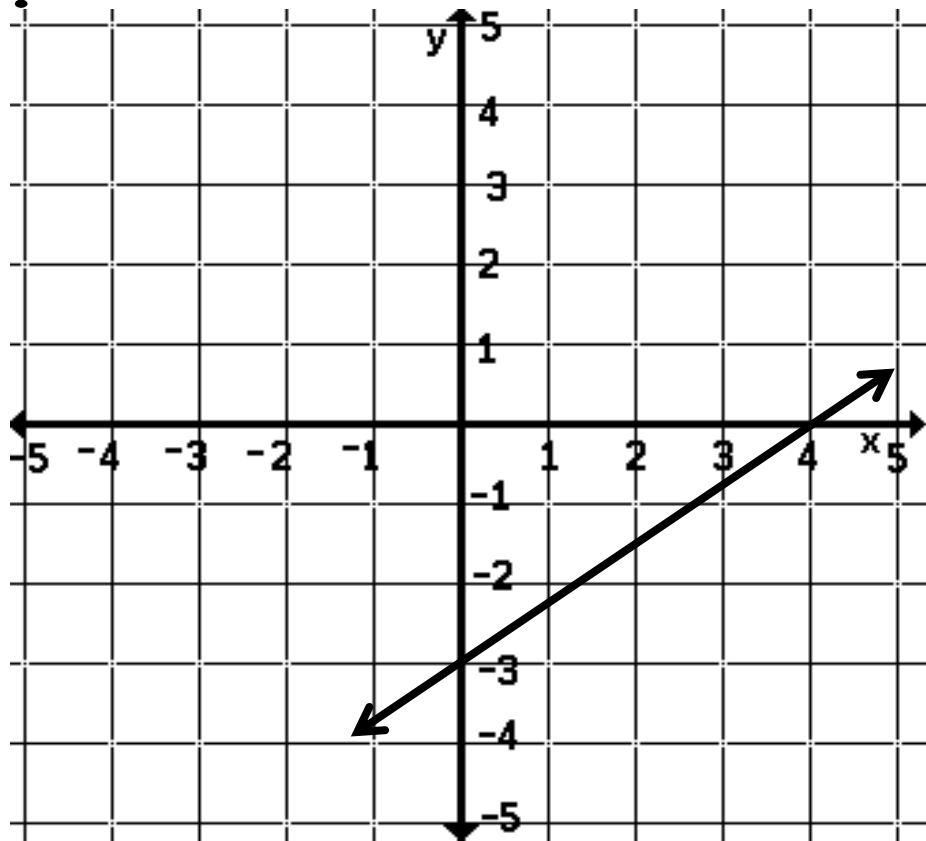
- Find the y-intercept.
- Calculate the slope. $\frac{\text{rise}}{\text{run}}$
- Use the slope-intercept form to write the equation:
 $y = mx + b$.

y-intercept (b) = 4

slope (m) = $\frac{\text{rise}}{\text{run}} = \frac{-4}{4} = -1$

Equation: $y = -x + 4$

b.



If there are no points on the line:

- Find out where the line crosses the y-axis. This is the y-intercept.
- Find another point on the line where it intersects the corner of a square.
- Use rise/run to calculate the slope.

y-intercept (b) = -3

slope (m) = $\frac{3}{4}$

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

VI. Equations of Horizontal and Vertical Lines

HOY

Horizontal

0 Slope

$Y = a \#$



VUX

Vertical

Undefined Slope

$X = a \#$

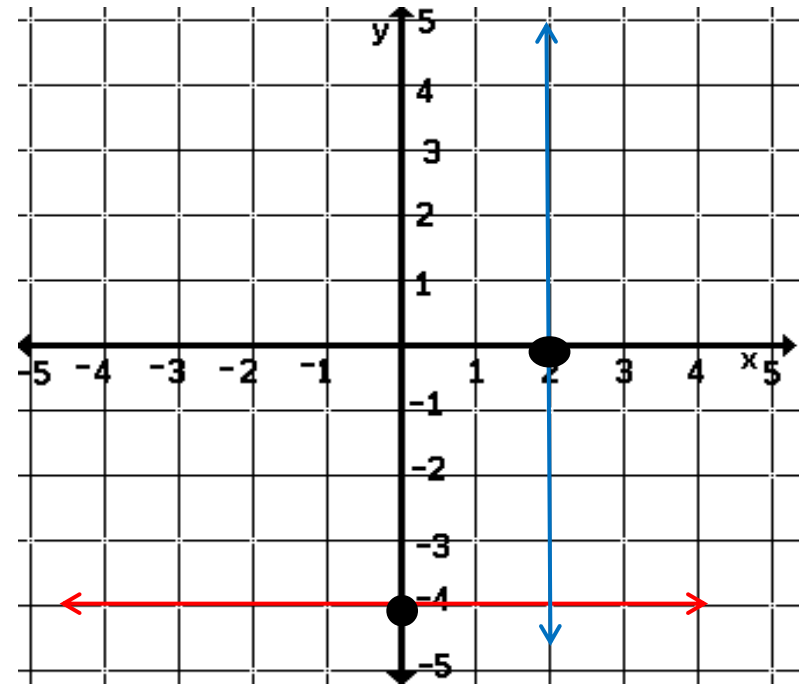


VII. Graph the Lines

$y = -4$ and $x = 2$

↑
HOY

↑
VUX



VIII. Point-Slope Form

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

a. Write an equation in slope-intercept form for the line that contains the point (5, 4) and has a slope of 2.

$$y - 4 = 2(x - 5)$$

$$\begin{array}{r} y - 4 = 2x - 10 \\ +4 \qquad +4 \end{array}$$

$$y = 2x - 6$$

b. Write an equation in slope-intercept form for the line that contains the point (1, -6) and has a slope of -3.

$$y - (-6) = -3(x - 1)$$

$$\begin{array}{r} y + 6 = -3x + 3 \\ -6 \qquad -6 \end{array}$$

$$y = -3x - 3$$

c. Write an equation in slope-intercept form for the line that contains the point (-4, 4) and has a slope of $\frac{1}{2}$.

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

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

$$\begin{array}{r} y - 4 = \frac{1}{2}x + 2 \\ +4 \qquad +4 \end{array}$$

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

d. Write an equation in slope-intercept form for the line that contains the points (2, 4) and (-2, 6).

$$m = \frac{6-4}{-2-2} = \frac{2}{-4} = -\frac{1}{2}$$
$$y - 4 = -\frac{1}{2}(x - 2)$$
$$y - 4 = -\frac{1}{2}x + 1$$
$$\quad +4 \qquad \qquad +4$$
$$y = -\frac{1}{2}x + 5$$

e. Write an equation in slope-intercept form for the line that contains the points (-3, -2) and (-4, 1).

$$m = \frac{1-(-2)}{-4-(-3)} = \frac{3}{-1} = -3$$
$$y - (-2) = -3(x - (-3))$$
$$y + 2 = -3(x + 3)$$
$$y + 2 = -3x - 9$$
$$\quad -2 \qquad \qquad -2$$
$$y = -3x - 11$$

f. Write an equation in slope-intercept form for the line that contains the points (2, -4) and (0, 6).

$$m = \frac{6-(-4)}{0-2} = \frac{10}{-2} = -5$$
$$y - 6 = -5(x - 0)$$
$$y - 6 = -5x$$
$$\quad +6 \qquad \qquad +6$$
$$y = -5x + 6$$