

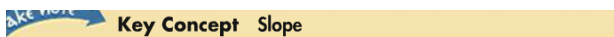
Lesson 2.3 Warm Up (Clickers)

1. Solve: $-2(x + 5) > -8$
2. Give an example of an integer that is not a whole number.
3. Find $f(2)$ for $f(x) = 3x^3 - 4$.

Lesson 2.3 Linear Functions & Slope-Intercept Form

Essential Understanding: Consider a nonvertical line in the coordinate plane. If you move from any point on the line to any other point on the line, the ratio of the vertical change to the horizontal change is constant. That constant ratio is the slope of the line.

The slope of a nonvertical line is the ratio of the vertical change to the horizontal change between two points.



The slope of a nonvertical line through points (x_1, y_1) and (x_2, y_2) is the ratio of the vertical change to the corresponding horizontal change.

$$\text{slope} = \frac{\text{vertical change (rise)}}{\text{horizontal change (run)}} = \frac{y_2 - y_1}{x_2 - x_1}, \text{ where } x_2 - x_1 \neq 0$$

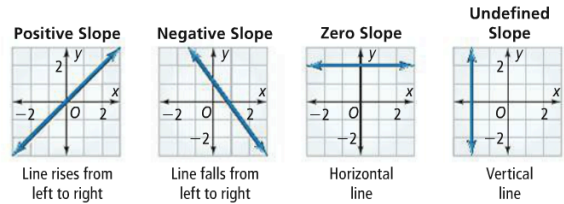
Ex. What is the slope of the line that passes through $(-3, 7)$ and $(-2, 4)$?

Ex. What is the slope of the line that passes through $(7, -3)$ and $(7, 1)$?

- 1 What is the slope of the line that goes through the points $(5, 4)$ and $(8, 1)$?

2 What is the slope of the line that goes through the points (5, 7) and (-2, 7)?

NOTE **Concept Summary Slope of a Line**



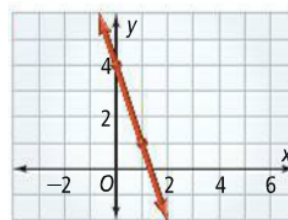
A function whose graph is a line is a linear function. You can represent a linear function with a linear equation, such as $y = 6x - 4$. A solution of a linear equation is any ordered pair (x, y) that makes the equation true.

Slope-intercept form of a line: $y = mx + b$, where m is the slope and b is the y-intercept.

Recall that the x-intercept and y-intercept are the points where the graph crosses the x-axis and y-axis, respectively.

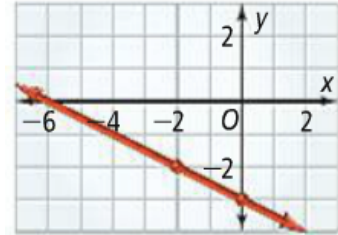
Ex. What is the equation of a line that has a slope of $1/5$ and y-intercept (0, -3)?

Ex. What is the equation of the line graphed below?



3 What is the equation of the line that has a slope of 5 and y-intercept of (0, -3)?

4 What is the equation of the line that is graphed below?



When an equation is not in slope-intercept form, you can rewrite it by solving for y .

Ex. Write $5x - 4y = 16$ in slope-intercept form. Then identify the slope and y-intercept.

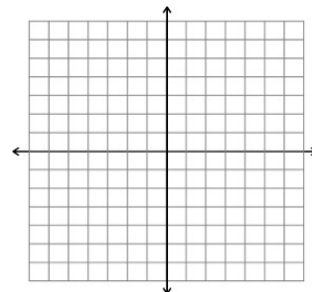
Ex. Write the equation below in slope-intercept form. Then identify the slope and y-intercept.

$$\frac{-3}{4}x + \frac{1}{2}y = -1$$

5 Write the equation in slope-intercept form:

$$3x + 2y = 18$$

Ex. What is the graph of $-2x + y = 1$?



Ex. What is the graph of $4x - 7y = 14$?

