Name _____ Date _____

Finding Slope From Two Points

The slope of a line is a number that helps you understand how steep the line is.

To find the slope between two points (x_1, y_1) and (x_2, y_2), use the formula below:

$$\text{slope} = \frac{\text{change in } y}{\text{change in } x} = \frac{y_2 - y_1}{x_2 - x_1}$$

Make sure that the values you substitute for x_1 and y_1 come from the same point! The values you substitute for x_2 and y_2 will come from the other point.

Let's try an example!
Find the slope of the line that goes through the points (−2, −1) and (4, 3). To start, choose one point to be your first point (x_1, y_1) and use the other as the second point (x_2, y_2). Then use the slope formula and write the answer as a simplified fraction or integer.

$(x_1, y_1) = (-2, -1)$

$(x_2, y_2) = (4, 3)$

$$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3 - (-1)}{4 - (-2)} = \frac{4}{6} = \frac{2}{3}$$

The slope of the line is $\frac{2}{3}$.

Find the slope of the line that goes through the two given points for each problem. Make sure to write each slope as a simplified fraction or integer.

(1, 3) and (2, 5) slope = _____	(3, 4) and (5, 2) slope = _____	(2, 10) and (6, 12) slope = _____
(8, 20) and (17, 15) slope = _____	(9, 2) and (−1, 4) slope = _____	(0, 7) and (1, −3) slope = _____
(−9, 11) and (6, 6) slope = _____	(5, −3) and (13, −5) slope = _____	(23, 4) and (−7, −11) slope = _____
(−4, −6) and (8, 2) slope = _____	(−12, −1) and (−8, −5) slope = _____	(−21, −18) and (−16, −3) slope = _____

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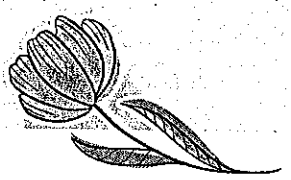
Finding Slope From a Graph

The slope of a line is a number that helps you understand how steep the line is. You can find the slope of a line by dividing the change in *y*, or rise, by the change in *x*, or run:

$$\text{Slope} = \frac{\text{change in } y}{\text{change in } x} = \frac{\text{rise}}{\text{run}}$$



Let's try it! Find the slope of the line on the graph below.

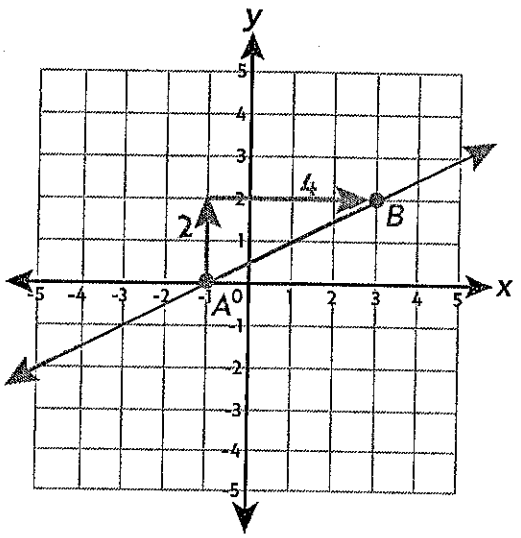
Pick two points on the line that are easy to identify.

A is at (–1, 0). *B* is at (3, 2).

To move from point *A* to point *B*, first go up 2 units. The rise is 2. Then go to the right 4 units. The run is 4.

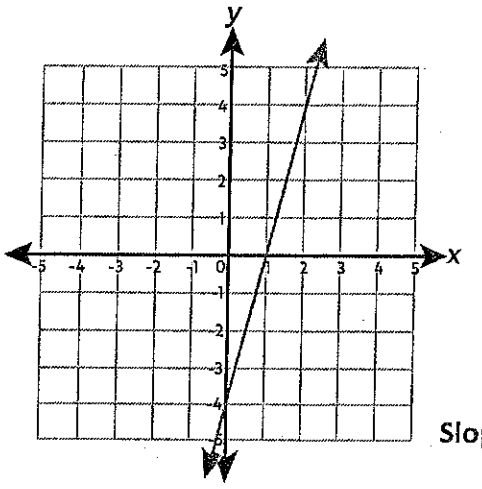
Write the slope. Make sure to simplify your answer.

$$\text{Slope} = \frac{\text{rise}}{\text{run}} = \frac{2}{4} = \frac{1}{2}$$

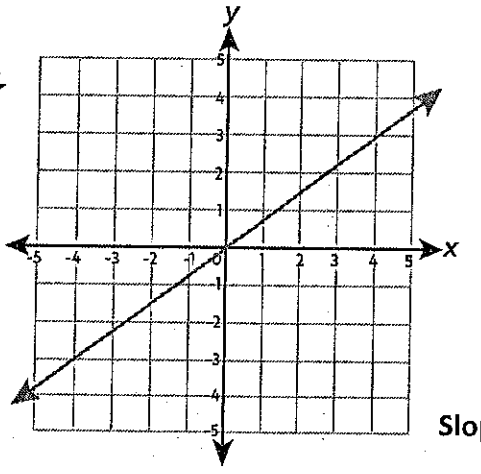


Note that sometimes slopes will be negative! This will happen if your rise is negative (you move down instead of up) **or** *your run is negative (you move left instead of right).*

Find the slope of each line below. Simplify your answer and write it as a proper fraction, improper fraction, or integer.



Slope = _____

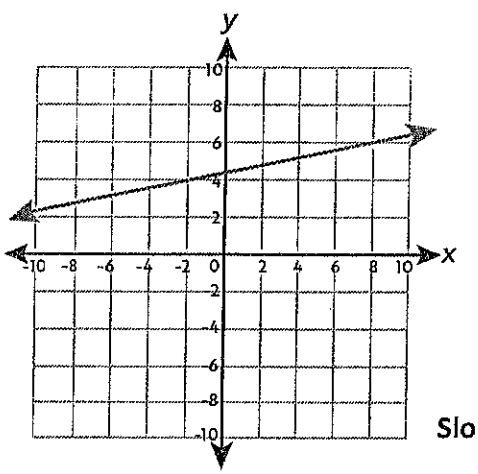


Slope = _____

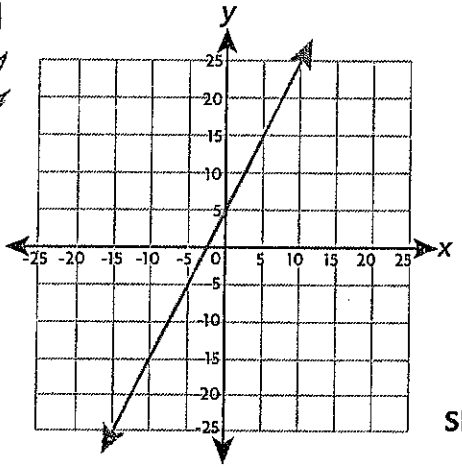
Name _____ Date _____

Finding Slope From a Graph

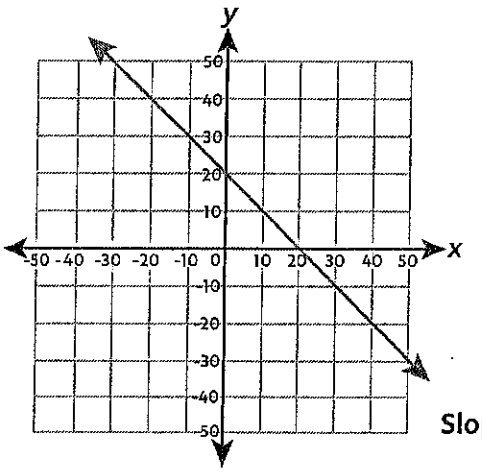
Find the slope of each line below. Simplify your answer and write it as a proper fraction, improper fraction, or integer.



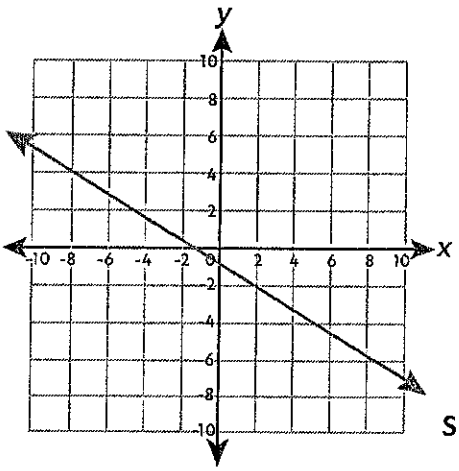
Slope = _____



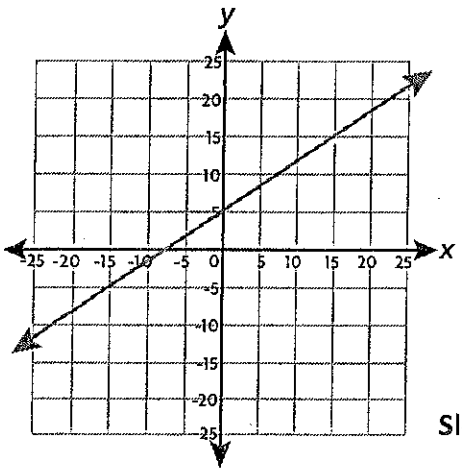
Slope = _____



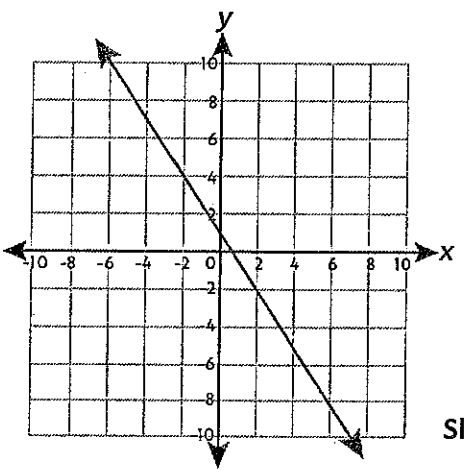
Slope = _____



Slope = _____



Slope = _____



Slope = _____

Find the slope from each equation.

11) $3x + 2y = 6$

12) $4x - 5y = 0$

13) $y = -1$

14) $x + 5y = -15$

15) $-2y - 10 + 2x = 0$

16) $x + 5 + y = 0$

17) $3x + 20 = -4y$

18) $-15 - x = -5y$

19) $-1 = -2x + y$

20) $-x - 1 = y$

21) $0 = 5y - x$

22) $-30 + 10y = -2x$