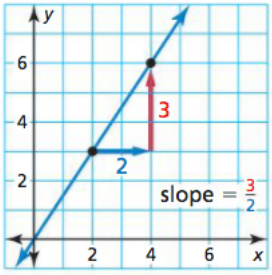
3.5 Graphing Linear Equations in Slope-Intercept Form

Do Now:
Determine the X-Intercept and Y-Intercept of: $14x - 4y = -280$

Class Discussion: What do you remember about **SLOPE?**

Slope: is the rate of change between any two points on a line. (Steepness)

$$Slope = \frac{Change\ in\ y}{Change\ in\ x}$$



Why is the slope NOT $= \frac{2}{3}$?

Slope-Intercept Form:

$y = mx + b$

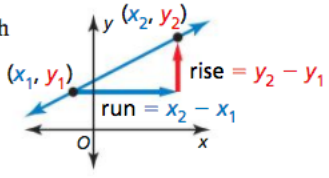
Examples: Determine the slope and y-intercept of each equation.

1) $y = \frac{4}{5}x - 5$
2) $y = \frac{-1}{6}x + \frac{1}{4}$
3) $y = 7x - \frac{1}{2}$
4) $y = 4 - \frac{5}{3}x$

Core Concept

Slope

The **slope** m of a nonvertical line passing through two points (x_1, y_1) and (x_2, y_2) is the ratio of the **rise** (change in y) to the **run** (change in x).



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

When the line rises from left to right, the slope is positive. When the line falls from left to right, the slope is negative.

Determine the slope between the points given:

1) (3 , 2) & (-3 , -2)

2) (-4 , 6) & (5 , -3)

Critical Thinking: The points in the tables lie on a line. Use the points to determine the slope of each set.

a.

x	y
4	20
7	14
10	8
13	2

b.

x	y
−1	2
1	2
3	2
5	2

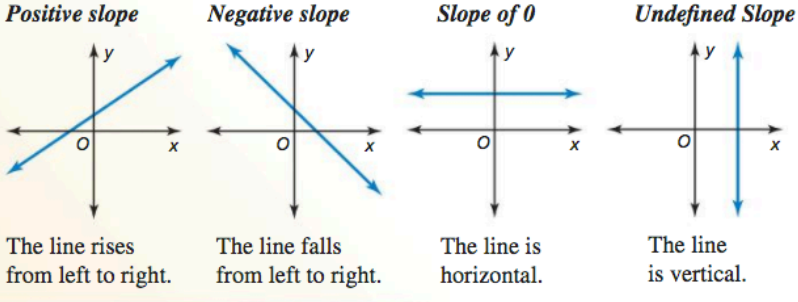
c.

x	y
−3	−3
−3	0
−3	6
−3	9

What can we conclude?

Concept Summary

Slope



Algebra 1 Name_____

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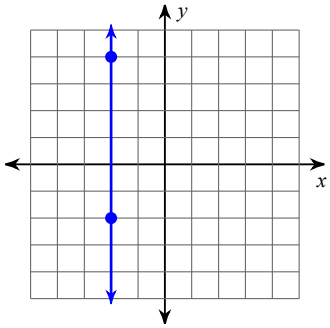
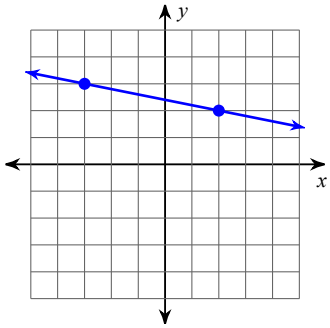
Find the slope of each line.

1)



2)



Find the slope of the line through each pair of points.

3) $(4, 0), (-14, 6)$

4) $(-4, -6), (9, -6)$

5) $(4, -7), (-6, -3)$

6) $(-10, -7), (-12, -14)$

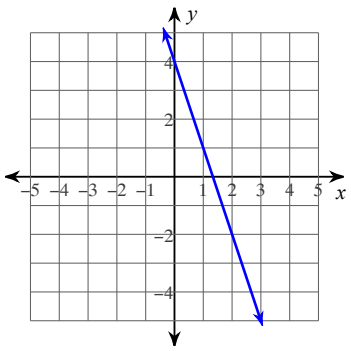
Find the value of x or y so that the line through the points has the given slope.

7) $(-1, 8)$ and $(x, 5)$; slope: 1

8) $(0, y)$ and $(-3, 8)$; slope: -5

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

9)



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