If the rate of change is constant then what will the graph of the data look like?

A linear function

Equations of Lines:

Slope-Intercept Form: $y = mx + b$

Standard Form: $Ax + By = C$

Point-Slope Form: $y - y_1 = m(x - x_1)$

Horizontal Lines: $y = \#$

Vertical Lines: $x = \#$

Sec 6-4: Point-Slope Form

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

If m is the slope of a line and (x_1 , y_1) is a point on the line, then the equation of the line in Point-Slope Form is:

Slope = 8, $(-9, 2)$ $\rightarrow$ $y - 2 = 8(x + 9)$

Write the equation of each line in Point-Slope Form.

1. The slope of the line is 8 and the line passes through the point (-9, 14).

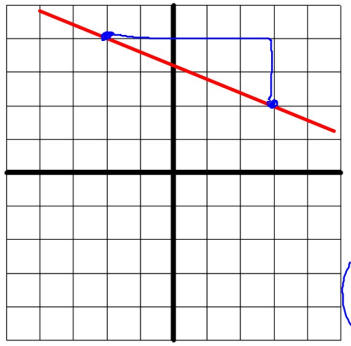
$y - 14 = 8(x + 9)$

2. The points (6, -1) and (-4, 11) are on the line.

$\frac{11 + 1}{-4 - 6} = \frac{12}{-10} = \frac{6}{-5}$

$y + 1 = \frac{6}{-5}(x - 6)$ OR $y - 11 = \frac{6}{-5}(x + 4)$

3.



$-\frac{2}{5}$

(3,2), (-2,4)

$y-2=-\frac{2}{5}(x-3)$

OR

$y-4=-\frac{2}{5}(x+2)$

1. Your phone company charges you $45 a month plus 10 cents per text sent. Write an equation to model your monthly bill.

slope on a graph
rate of change

slope intercept $y = 45 + .10x$

y-int on a graph
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2. You spend $170 at the sporting goods store purchasing 4 volleyballs and 2 basketballs.

$170 = 2b + 4u$

Real situations can be modeled with both Slope-Intercept Form and Standard Form.

Point-Slope doesn't model many, if any, real situations.

Sec 6-2: Slope-Intercept Form

$y = mx + b$

slope

Y-intercept

Writing the equation of a line in Slope-Intercept Form:

Write the equation of the line that passes through these two points in Slope-Intercept Form

(3, -8) and (-2, 17)

Method 1:

First: Find the slope.

$m = \frac{17 - -8}{-2 - 3} = \frac{25}{-5} = -5$

Second: Write the equation in Point-Slope Form

use $(3, -8)$ $y + 8 = -5(x - 3)$

Third: Change Point-Slope into Slope-Intercept

Use Distributive Property then subtract 8 from both sides

$y + 8 = -5x + 15$

$-8 \quad -8$

$y = -5x + 7$