ec 6-2: Slope-Intercept Form for the equation of a line.

$$y = mx + b$$

slope ———   ——— Y-intercept

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1. Write the equation of the line that passes through each pair points. Give your answer in Slope-Intercept Form

a) $(-6, 14)\&(3, 8)$

Method 1:

First: Find the slope. $m = \dfrac{14-8}{-6-3} = \dfrac{6}{-9} = -\dfrac{2}{3}$

Second: Write the equation in Point-Slope Form

Using (3,8) $y - 8 = -\dfrac{2}{3}(x - 3)$

Third: Change Point-Slope into Slope-Intercept

Distribute the slope: $y - 8 = -\dfrac{2}{3}x + 2$
$+8 \qquad\qquad +8$

Add 8 to both sides: $y = -\dfrac{2}{3}x + 10$

Method 2:   a) $(-6, 14)\&(3, 8)$

First: Find the slope.   The same as previous: $m = -\dfrac{2}{3}$

Second: Replace m in y = mx + b with the slope
$y = -\dfrac{2}{3}x + b$

Third: Replace y and x with the coordinates of one of the points   Using (3,8) $8 = -\dfrac{2}{3}(3) + b$

Fourth: Solve for b.
First simplify $8 = -2 + b$ b = 10
add 2 to both sides $+2 \qquad +2$

Fifth: Rewrite y = mx + b with the values of m and b you've found.
$y = -\dfrac{2}{3}x + 10$

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1. Write the equation of the line that passes through each pair points. Give your answer in Slope-Intercept Form

b) $(4, -7)\&(2, -7)$

$y = -7$

If the y-coordinates are the same your equation always turns out to be   y = that #

$m = \dfrac{-7 - -7}{4 - 2} = \dfrac{0}{2} = 0$

$y + 7 = 0(x - 4)$

$y + 7 = 0$
$-7 \quad -7$

$y = -7$

Left panel

2. Write the equation of the line in the graph. Give your answer in Slope-Intercept Form.

y-intercept = 3

−5

1

$m = \frac{1}{-5}$

$y = -\frac{1}{5}x + 3$

Right panel

x	y
4	14
8	15.5
12	17
16	18.5
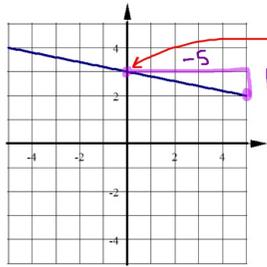
The data in the table can be modeled using a linear function.

1. Write this linear function.

Pick two data points to find slope.
Using (4,14) & (12,17)

$m = \frac{17-14}{12-4} = \frac{3}{8}$

Use this slope and one of the points, ex: (8,15.5) to write equation in slope-intercept form:

$y - 15.5 = \frac{3}{8}(x - 8)$

$y - 15.5 = \frac{3}{8}x - 3$
$+15.5 \qquad \qquad +15.5$

$y = \frac{3}{8}x + 12.5$

2. Find the value of y when x=6

Use this equation an replace x with 6 and find y.

$y = \frac{3}{8}(6) + 12.5 = \boxed{14.75}$

3. Find the value of x when y=11

Use this equation an replace y with 11 and find x.

$11 = \frac{3}{8}x + 12.5 \rightarrow \boxed{x = -4}$