

Name _____

Date _____

Function to Model a Linear Relationship - Guided Lesson Explanation**Explanation #1**

Straight line equation is $y = mx + b$

We already have two x and y values (-2, 0) and (0,4).

m = slope of straight line

b = y intercept

y intercept = touches the y at 4 so 4 is y intercept.

$$b = 4$$

We will find the slope of straight line

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{4 - 0}{0 - (-2)} = \frac{4}{2}$$

$$m = 2$$

Write the whole equation:

$$y = 2x + 4$$

Explanation #2

The equation of a line fits this format: $y = mx + b$

Where m is the slope and b is the y-intercept.

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{15 - 14}{14 - 12} = \frac{1}{2}$$

$$14 = \frac{1}{2} \times 12 + b \quad (\text{substitute the first point to solve for } b)$$

$$14 - 6 = b \quad b = 8$$

$$Y = \frac{1}{2}x + 8$$



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Explanation #3

This is done in the same exact fashion as #2.

We just have different values for x and y.

$$y = mx + b$$

Find m first:

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{19 - 18}{18 - 16} = \frac{1}{2}$$

Use the first point (16, 18) and put it into the equation to solve for b.

$$18 = \frac{1}{2} \times 16 + b$$

$$18 - 8 = b$$

$$b = 10$$

Put it all together:

$$Y = \frac{1}{2}x + 10$$

