Finding Slope/Rate of Change from 2 Points

1. Label your points \((x_1, y_1) \) \((x_2, y_2)\)

2. Using parenthesis, input the x/y values into the slope formula \(\frac{(y_2) - (y_1)}{(x_2) - (x_1)}\)

3. Add the numerator/denominator.

4. Simplify fraction if possible.

Find the slope between (-6,-2) and (2,14).

\[
m = \frac{y_2-y_1}{x_2-x_1} = \frac{(14) - (-2)}{(2) - (-6)} = \frac{16}{8} = 2
\]
Find the slope between (4, -2) and (6, 5).

\[ m = \frac{y_2 - y_1}{x_2 - x_1} \]

\[ \frac{(5) - (-2)}{(6) - (4)} = \frac{7}{2} = \frac{7}{2} \]

Finding Linear Equation from 2 Points

1. Find the slope/rate of change using \( \frac{y_2 - y_1}{x_2 - x_1} \)

2. Input slope/rate of change value \( m \) into slope-intercept form \( y = mx + b \).

3. Take one of the ordered pairs and input the x-value and y-value into the equation.

4. Solve equation to find value of b.

5. Write equation with just the m- & b-values
Find the equation of the line between the points 
(-6, -2) and (2, 14).

\[ m = \frac{y_2 - y_1}{x_2 - x_1} \]
\[ = \frac{14 - (-2)}{2 - (-6)} = \frac{16}{8} = 2 \]

\[ y = mx + b \]

\[ 14 = 2(2) + b \]
\[ 14 = 4 + b \]
\[ b = 10 \]

\[ y = 2x + 10 \]

Find the equation of the line between the points 
(4, -2) and (6, 5).

\[ m = \frac{y_2 - y_1}{x_2 - x_1} \]
\[ = \frac{5 - (-2)}{6 - 4} = \frac{7}{2} \]

\[ y = mx + b \]

\[ 5 = \frac{7}{2}(6) + b \]
\[ 5 = 21 + b \]
\[ b = -16 \]

\[ y = \frac{7}{2}x - 16 \]
Find the equation of the line that goes through the point (4,2) and has a slope of -3.

\[ y = mx + b \]

\[ 2 = -3(4) + b \]

\[ 2 = -12 + b \]

\[ b = 14 \]

\[ y = -3x + 14 \]