Note 1

An equation in the form $y = mx + b$, where m and b are constant values and x and y are variables, is a *linear equation* because the x and y values that satisfy the equation are points (x, y) that all lie on a straight line.

The variable x represents the independent variable, while the variable y represents the dependent variable.

For a linear equation $y = mx + b$, the constant value m is the *slope* of the line, and the constant value b is the *y-intercept*.

The slope, m, represents the rate of change of the independent variable.

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

The y-intercept is the point $(0, b)$ where the graph touches the y axis.