Linear Functions/Equations

$$y=mx+b$$

y

**DEPENDENT VARIABLE**

y is the **output**, the final result you are looking for when solving an equation or evaluating a function.

**y is a function of x meaning y depends on x**

y is measured vertically on a graph

common dependent variables: height, distance, money, temperature.

**INDEPENDENT VARIABLE**

x is the **input**, a number that you choose to plug into a function or equation.

x is measured horizontally on a graph

common independent variables: **TIME**, billing cycles, items sold

m

x

**RATE**

m is the **slope** when graphed, it expresses a ratio between dependent and independent variables.

When multiplied by the independent variable, the units reduce to one and only the dependent variable’s units remain

$$m=\frac{∆y}{∆x}=\frac{y\_{2}-y\_{1}}{x\_{2}-x\_{1}}=\frac{y units}{x units}$$

Common rates$ \frac{distance}{time}$ $ \frac{ grams }{liters}$ $\frac{profit}{sales} \frac{growth}{time} $

**CONSTANT**

b is a constant that is added or subtracted, it will have the same units as y

b moves the graph up and down, if b is positive 5, the whole graph shifts up 5 spaces

Common dependent variables: CONSTANT height, distance, money, temperature

b