

# Direct Variation

The values of the two related variables increase or decrease together.

If a variable  $y$  varies directly with a variable  $x$ , then

$$y = kx$$

where  $k$  is the **constant of proportionality** (or the variation constant).

# Example

The weight of an object on the Earth varies directly to its weight on the moon. If an astronaut weighs 203 lbs on the Earth and 32.48 lbs on the Moon. If the dog weighs 12 lbs on the Moon, how much does it weigh on Earth?

$$W_E = gW_M$$

$$175 = g32.48$$

$$6.25 = g$$

$$W_E = gW_M$$

$$W_E = (6.25)12$$

$$W_E = 75$$

The dog weighs 75 pounds on the Earth.