# Direct Variation

Direct variation is a special case of a linear relationship... it must contain the point (0,0). It passes through the origin; therefore it has a y-intercept of 0.

So, it is in the form: $y = a \cdot x$ or $\frac{y}{x} = a$

a = constant of variation ... think "slope"

If we were to say, "y varies directly with x, and the constant of variation is 3, that means:

$y = 3x$ or $\frac{y}{x} = 3$

Another way to think about it.... $\frac{y}{x}$ is always the same number.

(This number is the constant of variation.)

Yet another way to think of it:

If y varies directly with x, then

when x increases, y also increases;
when x decreases, y also decreases.