

Literal Equations

Literal Equation: an equation that involves two or more variables

Formula: an equation that states a relationship among quantities.

* I solate the variable *

* To solve a literal equation, we are solving for one variable in terms of another. This is useful when doing conversions using various formulas.

1) Solve for x : $ax + b = c$

$$\begin{array}{r|l} -b & -b \\ \hline ax & = c-b \\ a & a \end{array}$$

$$\boxed{x = \frac{c-b}{a}}$$

Restrictions?

$$a \neq 0$$

2) Solve for F : $S = 3F + 24$

$$\begin{array}{r|l} -24 & -24 \\ \hline S-24 & = 3F \\ 3 & 3 \end{array}$$

$$\boxed{\frac{S-24}{3} = F}$$

Restrictions?

No restrictions

3) Literal Equations
Area of Triangle

$$A = \frac{1}{2}bh \quad \text{or} \quad A = \frac{bh}{2}$$

Solve for h. $2 \cdot A = \frac{bh}{\cancel{2}} \cdot 2$

$$2A = bh$$

$$\frac{2A}{b} = h$$

Restrictions? $b \neq 0$

4) Perimeter of a Rectangle

$$P = 2L + 2W$$

Solve for W.

$$P = 2L + 2W$$

$$\frac{-2L \quad -2L}{}$$

$$\frac{P - 2L}{2} = \frac{2W}{2}$$

$$\frac{P - 2L}{2} = W$$

or $W = \frac{P}{2} - \frac{2L}{2}$

$$W = \frac{P}{2} - L$$

5) Density

$$D = \frac{m}{V} \quad \text{for } V.$$

$$V \cdot D = \frac{m}{\cancel{V}} \cdot \cancel{V}$$

$$\frac{V \cancel{D}}{\cancel{D}} = \frac{m}{D}$$

$$V = \frac{m}{D}$$

6) Solve for x.

$$\begin{aligned} ax + bx &= c \\ \overbrace{ax} + \overbrace{bx} &= c \\ x(a+b) &= c \\ \frac{x(a+b)}{a+b} &= \frac{c}{a+b} \\ \boxed{x = \frac{c}{a+b}} \end{aligned}$$

* isolate the variable
by factoring

7) Solve for P.

$$\begin{aligned} A &= P + PRT \\ A &= \overbrace{P} + \overbrace{PRT} \\ \frac{A}{1+RT} &= \frac{P(1+RT)}{1+RT} \\ \frac{A}{1+RT} &= P \end{aligned}$$

* isolate the
variable by
factoring