

Formulas and Functions

Formula - an algebraic equation that relates two or more real-life quantities. Ex. $A = lw$; $d = rt$ (distance = rate x time)

Function - a rule that establishes a relationship between two quantities, called the input and the output.

Function Form - a two variable equation is written in function form if one of its variables is isolated on one side of the equation.

The isolated variable is the output and is a function of the input.

Ex. $P = 4s$; describes the perimeter (P) of a square as a function of its side length (s)

Rewrite the original formula to isolate the indicated variable.

1) Simple Interest Formula $I = prt$

Solve for t (time)

$$\frac{I}{pr} = \frac{\cancel{pr}t}{\cancel{pr}}$$

$$\frac{I}{pr} = t$$

2) Perimeter of a Rectangle $P = 2l + 2w$

Solve for w (width)

$$P = 2l + 2w$$

$-2l \quad -2l$

$$\frac{P-2l}{2} = \frac{\cancel{2}w}{\cancel{2}}$$

$$w = \frac{P-2l}{2}$$

Rewrite the original formula to isolate the indicated variable.

3) Volume of a Regular Pyramid $V = \frac{1}{3} lwh$

Solve for w (width)

$$V = \frac{1}{3} lwh$$

$$3 \cdot V = \cancel{\frac{3}{3}} \cdot \cancel{\frac{1}{3}} lwh$$

$$\frac{3V}{lh} = \frac{lwh}{lh}$$

$$\frac{3V}{lh} = w$$

Write the equation so that x is a function of y .

4) $-2x + 3y = 8$

$$\frac{-2x}{-2} = \frac{-3y + 8}{-2}$$

$$x = \frac{3}{2}y - 4$$

Write the equation so that y is a function of x .

5) $\frac{y}{5} - 7 = -2x$

$$\frac{y}{5} = (-2x + 7) \times 5$$

$$y = -10x + 35$$

Write the equation so that y is a function of x .

$$6) 4x - 3(y - 2) = 15 + y$$

$$4x + -3y + 6 = 15 + y$$

$$4x + -4y + 6 = 15$$

$$4x + -4y = 9$$

$$\frac{-4y}{-4} = \frac{-4x}{-4} + \frac{9}{-4}$$

$$y = x + -\frac{9}{4}$$

Rewrite the equation so that x is a function of y .

Then use the result to find x when $y = -2, -1, 0,$ and 1 .

$$7) 2x - y = 9$$

$$\begin{aligned} & \quad \quad +y \quad +y \\ \frac{2x}{2} &= \frac{y}{2} + \frac{9}{2} \\ x &= \frac{y}{2} + \frac{9}{2} \end{aligned}$$

X	Y
$-\frac{2}{2} + \frac{9}{2} = \frac{7}{2}$	-2
$-\frac{1}{2} + \frac{9}{2} = \frac{8}{2} = 4$	-1
$\frac{1}{2} + \frac{9}{2} = \frac{10}{2} = 5$	0
	1