

1.4 Rewriting Equations & Formulas

Example 1: Solve for h .

Area of a Triangle: $A = \frac{1}{2}bh$

$2A = bh$

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

Example 2: Solve for w .

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

$-2l - 2l$

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

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

Example 3: Solve for r .

Simple Interest Formula: $\frac{I}{Pt} = \frac{Pr t}{Pt}$

$$r = \frac{I}{Pt}$$

If the interest earned is \$400, the principal is \$2000, and the time is 5 years, what is the rate?

$$r = \frac{I}{Pt} = \frac{400}{(2000)(5)} = \frac{400}{10000} = \frac{1}{25} = 0.04 = 4\%$$

Example 4: Solve for h .

Volume of a Cylinder: $V = \frac{\pi r^2 h}{\pi r^2}$

$$h = \frac{V}{\pi r^2}$$

If the volume is 1848 in³ and the radius is 14 inches, what is the height of the cylinder?

(Hint: Use $\frac{22}{7}$ for π .)

$$h = \frac{V}{\pi r^2} = \frac{1848}{\left(\frac{22}{7}\right)(14)^2} = \frac{1848}{\left(\frac{22}{7}\right)\left(\frac{196}{1}\right)} = \frac{1848}{22 \cdot 28}$$

$$h = \frac{1848}{616} = 3 \quad \boxed{h = 3 \text{ in}}$$

Example 5: Solve for h .

Volume of a Cone: $V = \frac{1}{3} \pi r^2 h$

$$h = \frac{3V}{\pi r^2}$$

$$\frac{3V}{\pi r^2} = \frac{\pi r^2 h}{\pi r^2}$$

If the volume is 54 m^3 and the radius is 4 meters, what is the height of the ~~cylinder~~^{cone} to the nearest tenth?

(Hint: Use 3.14 for π .)

$$h = \frac{3V}{\pi r^2} = \frac{3(54)}{(3.14)(4)^2} = \frac{162}{(3.14)(16)} = \frac{81}{(3.14)(8)}$$

$$\begin{array}{r} 13 \\ 3.14 \\ \times 8 \\ \hline 25.12 \end{array}$$

$$= \frac{81}{25.12}$$

$$h \approx 3.2 \text{ m}$$

$$\begin{array}{r} 322 \\ 25 \overline{) 810.00} \\ \underline{-7536} \\ 5640 \\ \underline{-5024} \\ 6160 \\ \underline{-5024} \\ 1136 \end{array}$$