

# Rearranging Equations Quiz Review

DIRECTIONS: Solve the following equations for the given variable. Box/Circle your final answer.

1.  $\frac{xy}{w} = \frac{zw}{w}$ , for  $z$

$$\boxed{\frac{xy}{w} = z}$$

2.  $\frac{pmn}{pn} = \frac{rq}{pn}$ , for  $m$

$$\boxed{m = \frac{rq}{pn}}$$

3.  $df + g = h$ , for  $f$

$$\begin{aligned} -g & -g \\ df & = \frac{h-g}{d} \\ \frac{df}{d} & \end{aligned}$$

$$\boxed{f = \frac{h-g}{d}}$$

4.  $3a + bd = 2c$ , for  $d$

$$\begin{aligned} -3a & -3a \\ bd & = \frac{2c-3a}{b} \\ \frac{bd}{b} & \end{aligned}$$

$$\boxed{d = \frac{2c-3a}{b}}$$

4.  $jk = mp + fw$ , for  $w$

$$\begin{aligned} -mp & -mp \\ jk - mp & = \frac{fw}{f} \\ \frac{jk-mp}{f} & \end{aligned}$$

$$\boxed{\frac{jk-mp}{f} = w}$$

5.  $2a - 3b = 5cd$ , for  $a$

$$\begin{aligned} +3b & +3b \\ 2a & = 5cd + 3b \\ \frac{2a}{2} & = \frac{5cd+3b}{2} \end{aligned}$$

$$\boxed{a = \frac{5cd+3b}{2}}$$

6.  $\frac{5t}{x} = yk$ , for  $t$

$$\begin{aligned} \frac{5t}{5} & = \frac{ykx}{5} \\ t & = \frac{ykx}{5} \end{aligned}$$

$$\boxed{t = \frac{ykx}{5}}$$

7.  $b = \frac{p-8}{r}$ , for  $p$

$$\begin{aligned} br & = p - 8 \\ +8 & +8 \\ br + 8 & = p \end{aligned}$$

$$\boxed{br + 8 = p}$$

8.  $qw + 4r = 9r + ty$ , for  $r$

$$\begin{aligned} 4r - 9r & = ty - qw \\ -5r & = ty - qw \end{aligned}$$

$$\boxed{r = \frac{ty - qw}{-5}}$$

9.  $s - fg + 3h = -h + 2jk$ , for  $h$

$$\begin{aligned} 3h + h & = 2jk - s + fg \\ 4h & = 2jk - s + fg \end{aligned}$$

$$\boxed{h = \frac{2jk - s + fg}{4}}$$

# Rewriting Formulas for the Real-World

**DIRECTIONS:** Answer all parts of the following questions. Be sure to LABEL your answers!

**1. WATER PRESSURE** The water pressure on a submerged object is given by  $P = 64d$ , where  $P$  is the pressure in pounds per square foot, and  $d$  is the depth of the object in feet.

a. Solve the formula for  $d$ .

$$\frac{P}{64} = d$$

b. Find the depth of a submerged object if the pressure is 672 pounds per square foot.

$$\frac{672}{64} = \boxed{10.5 \text{ ft}}$$

**2. INTEREST** Simple interest that you may earn on money in a savings account can be calculated with the formula  $I = prt$ .  $I$  is the amount of interest earned,  $p$  is the principal or initial amount invested,  $r$  is the interest rate, and  $t$  is the amount of time the money is invested for.

a. Solve the formula for  $p$ .

$$\frac{I}{rt} = \frac{prt}{rt}$$

$$\boxed{\frac{I}{rt} = p}$$

b. How much money you would have to invest to make \$10 interest with an interest rate of 5% over 2 years? (hint: use 0.05 for  $r$ )

$$\frac{10}{.05 \cdot 2} = \frac{10}{.1} = \boxed{\$100}$$

**3. DISTANCE** The distance  $d$  a car can travel is found by multiplying its rate of speed  $r$  by the amount of time  $t$  that it took to travel the distance. If a car has already traveled 5 miles, the total distance  $d$  is found by the formula  $d = rt + 5$ .

a. Solve the formula for  $r$ .

$$\begin{aligned} d &= rt + 5 \\ -5 &\quad -5 \\ \hline d - 5 &= rt \\ \frac{d - 5}{t} &= \frac{rt}{t} \rightarrow \boxed{\frac{d - 5}{t} = r} \end{aligned}$$

b. What is the speed of the car if it travels 235 miles in 5 hours?

$$\frac{235 - 5}{5} = 46 \text{ mi/hr (mph)}$$

**4. PHYSICS** The pressure exerted on an object is calculated by the formula  $P = \frac{F}{A}$ , where  $P$  is the pressure,  $F$  is the force, and  $A$  is the surface area of the object. Water shooting from a hose has a pressure of 75 pounds per square inch (psi).

a. Solve the equation for  $F$ .

$$P = \frac{F}{A}$$

$$\boxed{AP = F}$$

b. Suppose the surface area covered by the direct hose spray is 0.442 square inch. Solve the equation for  $F$  and find the force of the spray.

$$.442 \cdot 75 = \boxed{33.15 \text{ units}} \\ \text{Newtons}$$