Literal Equations Review Name Key

A literal equation is an equation that contains multiple variables.

- The goal of a literal equation is to isolate a particular variable (not always x)!

1. Solve for a.

$ax + b = c$

$ax = c - b$

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

2. Solve for w.

$V = lwh$

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

3. Solve for b.

$2 \cdot A = \frac{y+b}{2} \cdot 2$

$2A = y + b$

$2A - y = b$

4. Solve for x.

(combine like terms first)

$3x + 5x - 7y = z$

$8x - 7y = z$

$8x = z + 7y$

$x = \frac{z+7y}{8}$

OR

$x = \frac{1}{8}z + \frac{7}{8}y$

5. Solve for w.

$w \cdot CD = \frac{12s}{w} \cdot w$

$\frac{w \cdot CD}{CD} = \frac{12s}{CD}$

$w = \frac{12s}{CD}$

6. Solve for t.

$\frac{t}{5} - 4r = 25$

$5\left(\frac{t}{5} = 25 + 4r\right)$

$t = 125 + 20r$

7. The formula for a person's typing speed is $s = \frac{w - 10e}{m}$, where s is speed in words per minute, w is number of words typed, e is number of errors, and m is number of minutes typing.

a. Solve for e.

$ms = w - 10e$

$ms - w = -10e$

$\frac{ms - w}{-10} = e$

b. **Using your formula from part a**, find the number of errors when you type 500 words for 10 minutes at a speed of 40 words per minute.

$m = 10$ $s = 40$ $w = 500$

$\frac{10(40) - 500}{-10} = e \Rightarrow \frac{400 - 500}{-10} \Rightarrow \frac{-100}{-10} \Rightarrow$

$e = 10$

8. The formula $I = Prt$ can be used to determine the interest I that is earned on a principal amount of money P, when the money is invested at an annual percentage rate r for t years.

a. Solve the formula $I = Prt$ for t.

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

b. If a couple invests \$5000 in an account that earns a 3% interest rate, how long will they need to invest it to earn \$1200 in interest? (Hint: Convert the interest rate to a decimal.)

$P = 5000$ $r = 0.03$ $I = 1200$

$\frac{1200}{5000(0.03)} = t$

$\frac{1200}{150} = t$

8 years

$t = 8$

9. $\frac{2}{5}(-10a + 5b) = d$ Solve for a

$\frac{-20}{5}a + \frac{10}{5}b = d$

$-4a + 2b = d$

$-4a = d - 2b$

$a = \frac{-1}{4}d + \frac{1}{2}b$ OR $a = \frac{d - 2b}{-4}$