

Name _____
Date _____

Solving Literal Equations

Equations and formulas that have several variables (letters) are called **literal equations**. Your job, usually, will be to solve the equation for one of the variables. In other words, move all the letters away from the one you are solving for. They go to the other side of the equal sign so that the one variable you are solving for stands **alone**.

In examples #1 – 3 solve for x:

1a) $4x = 12$	1b) $ax = b$
2a) $x + 4 = 7$	2b) $x + a = b$
3a) $3x + 2 = 5$	3b) $ax + c = d$

4) Solve for x:
 $ax - g = 8g$

5) Solve for w:
 $r = 5(w + x)$

6) Brandon knows that his train route from Illinois to Tennessee is 430 miles long. He also knows that **Distance = rate • time** ($D = rt$)

(a) Solve for t in the formula $D = rt$

(b) How long will his route take if he averages a speed of 50 mi/hr?



Name: _____

8A Alg 1 CC

Date: _____

Period _____

More Examples: Solve for the stated values in the given equations.

1) $4x - a = c$ for x

2) $I = PRT$ for T

3) $a(x + b) = c$ for x

4) $\frac{2}{3}y = x$ for y

5) $A = \frac{1}{2}bh$ for h

6) $5b + 3a = 7b - 4a$ for a

7) $8x - 3y = 4x - 3y$ for x

8) $C = 2\pi r$ for r

9) $D = \frac{m}{v}$ for v

10) $\frac{4x - 2f}{5} = a$ for x

11) $C = \pi r^2$ for r

12) $d = xy^2$ for y

13) $x = \frac{4y}{z^2}$ for z

14) $V = \pi r^2 h$ for h & then for r

15) $x = \frac{y}{a}b$ for b

$$16) r = \frac{1}{3}xy^2 \quad \text{for } y$$

$$17) bc + d = f \quad \text{for } c$$

$$18) m = 2(x + n) \quad \text{for } x$$

$$19) ax - by = c \quad \text{for } x$$

$$20) P = 2L + 2W \quad \text{for } W$$

$$21) abx - d = 5d \quad \text{for } x$$

$$22) C = \frac{5}{9}(F - 32) \quad \text{for } F$$

$$23) \text{For } x: \quad a + 12x = m$$

$$24) 4x + 4b = 12 \quad \text{for } x$$

$$25) H = cd \quad \text{for } d$$

$$26) Z = 3c + Pf \quad \text{for } P$$

$$27) D = crt + c \quad \text{for } t$$

$$28) kx + y = g \quad \text{for } x$$

$$29) C = \frac{ab}{2} \quad \text{for } b$$

$$30) V = \frac{1}{4}\pi y^2 z \quad \text{for } y$$

31) $2y + 3x = 18$ for y

32) $\frac{2x - 8y}{6} = c$ for x

33) $a = \frac{2b}{c^3}$ for c

34) $m = \frac{1}{2}xy$ for x

35) $x = \frac{5}{3}(y + 2)$ for y

36) $\frac{e(x+c)}{b} = 2$ for x

37) $\frac{3(x-k)}{w} = 4$ for x

38) $a(x+b) - c = d$ for x

39) $F = \frac{9}{5}c + 32$ for c

40) Solve $4 = 2m - 5n$ for m . What are the values of m when $n = -2, 0$ and 2 .