Accelerated Math Notes
(Section 8-5)
Solving Equations with Variables on Each Side

Remember:

A <u>solution</u> to an equation is the value for the variable that makes the equation true.

Is
$$x = -2$$
 a solution to the equation $6x - 3 = -4x - 23$?
$$\frac{6x - 3}{6(-2) - 3} = -4x - 23$$

$$-4x - 23$$

$$-4x - 23$$

$$-12 - 3$$

$$-12 - 3$$

$$-15$$

$$8 + -23$$

$$-15$$

Solve:
$$7x + 3 = 2x + 23$$

$$7x + 3 = 2x + 23$$

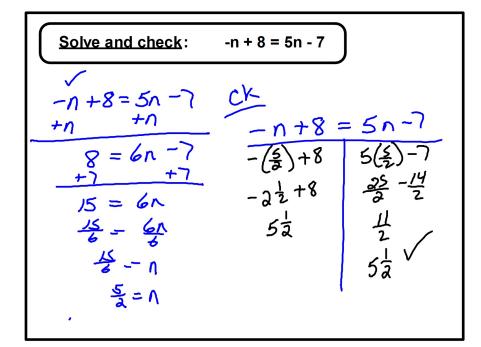
$$-2x$$

$$-2x$$

$$5x + 3 = 2 \cdot 3$$

$$5x = 20$$

$$5x = 20$$



Solve and check:
$$4x + 15 = 2x - 7$$

$$\frac{4x+15}{-2x} = 2x-7$$

$$\frac{2x+15=-7}{-15} - \frac{4(-1)+15}{-15} = \frac{2x-7}{-29}$$

$$\frac{2x}{2x} = -22$$

$$\frac{2x}{2} = -22$$

Solve and check:
$$2.4 - 3m = 6.4 - 8.8$$

$$2.4 - 3m = 6.4 - 8.8$$

$$2.4 + -3m = -2.4$$

$$-2.4 - 2.4$$

$$-3m = -4.8$$

$$-3m = -4.8$$

$$-3m = -4.8$$

$$2.4 - 4.8$$

$$2.4 - 4.8$$

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$$2.4 - 4.8$$

A car rental agency has two plans. Under Plan A, a car rents for \$80 plus \$20 each day. Under Plan B, a car rents for \$120 plus \$15 a day. What number of days results in the same cost? Write an equation that can be used to solve this problem. Then solve.

Let _d = # of days that will result in the same cost

$$\frac{\cos + P \cdot \ln A}{80 + 20d} = \cos + P \cdot \ln B}{80 + 20d} = 120 + 15d$$

$$\frac{80 + 5d}{-15d} = 120$$

$$\frac{80 + 5d}{-80} = 120$$

$$\frac{80 + 5d}{5d} = 40$$

$$\frac{5d}{5} = 40$$

$$\frac{5d}{5} = 40$$

A cell phone provider offers two plans. Under Plan A, the monthly cost is \$20 with a cost of \$0.35 per minute. Under Plan B, the monthly cost is \$35 with a cost of \$0.15 per minute. What number of minutes results in the same cost?

Let m = # of minutes that will result in the same cost

$$\begin{array}{rcl}
Plan A &=& Plan B \\
cost &=& cost \\
\hline
20 + 0.35 m &=& 35 + 0.15 m \\
\hline
-.15 m &=& -.15 m \\
\hline
20 + .2 m &=& 35 \\
\hline
-20 &=& -.25 \\
\hline
.2m &=& 15 \\
\underline{.2m} &=& 15 \\
\hline
.2m &=& 15
\end{array}$$

$$\begin{array}{rcl}
75 & min \\
\hline
75 & min \\
\hline
\end{array}$$