

Solving equations with variables on both sides.

Solve the equations, if possible.

1. $-3x = 5x + 8$

$$\begin{array}{r|l} +3x & +3x \\ \hline 0 & 8x + 8 \\ -8 & -8 \\ \hline -8 & 8x \\ \hline 8 & 8 \end{array}$$

$$\frac{-8}{8} = \frac{8x}{8}$$

$$\boxed{-1 = x}$$

2. $7 + 4c = 10c$

$$\begin{array}{r|l} +4c & +4c \\ \hline 7 & 14c \\ \hline 14 & 14c \\ \hline \frac{1}{2} & c \end{array}$$

$$\boxed{\frac{1}{2} = c}$$

3. $7x + 19 = -2x + 55$

$$\begin{array}{r|l} +2x & +2x \\ \hline 9x + 19 & 55 \end{array}$$

4. $-12g + 4 = 8g + 6$

$$\begin{array}{r|l} +12g & +12g \\ \hline 4 = 20g + 6 & +6 \\ +6 & +6 \\ \hline 10 = 20g & \\ \hline \frac{10}{20} = \frac{20g}{20} & \\ \hline \boxed{\frac{1}{2} = g} & \end{array}$$

5. $|x + 2 = |x + 4$

$$\begin{array}{r|l} -x & -x \\ \hline 2 = 4 & \\ \hline \end{array}$$

No variable
can't solve
False

$$\boxed{\text{No solution}}$$

6. $7r + (+8) = 8 + 7r$

$$\begin{array}{r|l} -7r & -7r \\ \hline 8 = 8 & \\ \hline \end{array}$$

No variable
to solve for.
TRUE

$$\boxed{\text{Infinitely Many Solutions}}$$

You have \$60 and decide to save \$5 each week. Your sister has \$135 and decides to spend \$10 each week.

- a. Write an equation that represents when you and your sister will have the same amount of money.

$$\begin{array}{r|l} 60 + 5w = 135 - 10w & +10w \\ \hline 60 + 15w = 135 & \\ -60 & -60 \\ \hline 15w = 75 & \\ \hline \frac{15w}{15} = \frac{75}{15} & \\ \hline w = 5 & \end{array}$$

- b. Solve the equation you wrote in part a.

- c. Explain what your solution in part b means in the context of the situation.

In 5 weeks you & your sister have the same amount of money