

Solving Equations with Variables on Both Sides.

Date _____ Period _____

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Solve each equation.

1) $7 + 5r + 3 + 5 = 1 + 7r$

$$\begin{array}{r} 5r + 15 = 1 + 7r \\ -5r \quad -5r \\ \hline 15 = 1 + 2r \\ -1 \quad -1 \\ \hline 14 = 2r \\ \frac{14}{2} = \frac{2r}{2} \\ 7 = r \end{array}$$

2) $-4 + 6k + 8k = -4 - 7k$

$$\begin{array}{r} -4 + 14k = -4 - 7k \\ +7k \quad +7k \\ \hline -4 + 21k = -4 \\ +4 \quad +4 \\ \hline 21k = 0 \\ \frac{21k}{21} = \frac{0}{21} \\ k = 0 \end{array}$$

3) $8n - 7 = 7n - 14$

$$\begin{array}{r} +7 \quad +7 \\ \hline 8n = 7n - 7 \\ -7n \quad -7n \\ \hline n = -7 \end{array}$$

4) $-7b - 14 = -5b - 4b$

$$\begin{array}{r} -7b - 14 = -9b \\ +7b \quad +7b \\ \hline -14 = -2b \\ \frac{-14}{-2} = \frac{-2b}{-2} \\ 7 = b \end{array}$$

5) $8 + 7n = 6n + 2n$

$$\begin{array}{r} 8 + 7n = 8n \\ -7n \quad -7n \\ \hline 8 = n \end{array}$$

6) $2 - 2n - 2n = -5 - 3n$

$$\begin{array}{r} 2 - 4n = -5 - 3n \\ +4n \quad +4n \\ \hline 2 = -5 + n \\ +5 \quad +5 \\ \hline 7 = n \end{array}$$

7) $7x = 3x + 4x$

$$\begin{array}{r} 7x = 7x \\ -7x \quad -7x \\ \hline 0 = 0 \end{array}$$

Infinite Solutions

8) $4 + 7x = 8x - 2x$

$$\begin{array}{r} 4 + 7x = 6x \\ -7x \quad -7x \\ \hline 4 = -x \\ \frac{4}{-1} = \frac{-x}{-1} \\ -4 = x \end{array}$$

9) $2 + 7n = -4 + 5n$

$$\begin{array}{r} -5n \quad -5n \\ \hline 2 + 2n = -4 \\ -2 \quad -2 \\ \hline 2n = -6 \\ \frac{2n}{2} = \frac{-6}{2} \\ n = -3 \end{array}$$

10) $-7 - 3a = 1 - 4a$

$$\begin{array}{r} +4a \quad +4a \\ \hline -7 + a = 1 \\ +7 \quad +7 \\ \hline a = 8 \end{array}$$