

Solving for x: Lesson 07

Equations with Variables on Both Sides: Worksheet 1

Name: _____

MATH ALL

Solve these equations using algebra:

$$\begin{array}{r}
 3g - 1 = -g - 9 \\
 +g \quad \quad +g \\
 \hline
 4g - 1 = -9 \\
 +1 \quad +1 \\
 \hline
 4g = -8 \\
 \frac{4g}{4} = \frac{-8}{4} \quad (g = -2)
 \end{array}$$

$$\begin{array}{r}
 -7h + 11 = -2h - 14 \\
 +7h \quad \quad +7h \\
 \hline
 11 = 5h - 14 \\
 +4 \quad \quad +4 \\
 \hline
 15 = 5h \\
 \frac{15}{5} = \frac{5h}{5} \quad (3 = h)
 \end{array}$$

$$\begin{array}{r}
 6i - 2 = 4i + 12 \\
 -4i \quad \quad -4i \\
 \hline
 2i - 2 = 12 \\
 +2 \quad +2 \\
 \hline
 2i = 14 \\
 \frac{2i}{2} = \frac{14}{2} \quad (i = 7)
 \end{array}$$

$$\begin{array}{r}
 -12x + 5 = 3x + 50 \\
 +12x \quad \quad +12x \\
 \hline
 5 = 15x + 50 \\
 -50 \quad \quad -50 \\
 \hline
 -45 = 15x \\
 \frac{-45}{15} = \frac{15x}{15} \quad (-3 = x)
 \end{array}$$

$$\begin{array}{r}
 8a + 10 = 5a + 4 \\
 -5a \quad \quad -5a \\
 \hline
 3a + 10 = 4 \\
 -10 \quad -10 \\
 \hline
 3a = -6 \\
 \frac{3a}{3} = \frac{-6}{3} \quad (a = -2)
 \end{array}$$

$$\begin{array}{r}
 b - 14 = -7b - 6 \\
 +7b \quad \quad +7b \\
 \hline
 8b - 14 = -6 \\
 +14 \quad +14 \\
 \hline
 8b = 8 \\
 \frac{8b}{8} = \frac{8}{8} \quad (b = 1)
 \end{array}$$

$$\begin{array}{r}
 -8k + 31 = -4k + 7 \\
 +8k \quad \quad +8k \\
 \hline
 31 = 4k + 7 \\
 -7 \quad \quad -7 \\
 \hline
 24 = 4k \\
 \frac{24}{4} = \frac{4k}{4} \quad (k = 6)
 \end{array}$$

$$\begin{array}{r}
 -5b - 8 = 2b + 62 \\
 +5b \quad \quad +5b \\
 \hline
 -8 = 7b + 62 \\
 -62 \quad \quad -62 \\
 \hline
 -70 = 7b \\
 \frac{-70}{7} = \frac{7b}{7} \quad (-10 = b)
 \end{array}$$

Challenges!

$$\begin{array}{r} \frac{-3}{7}y + 9 = \frac{5}{7}y + 2 \\ + \frac{3}{7}y \quad + \frac{3}{7}y \\ \hline 9 = \frac{8}{7}y + \frac{2}{7} \\ -2 \quad -2 \\ \hline \frac{7}{8} \cdot \frac{7}{1} = \frac{8}{7}y \cdot \frac{7}{8} \\ \frac{49}{8} = y \end{array}$$

$$\begin{array}{r} \frac{-8}{10}d + 3 = -\frac{3}{10}d + 5 \\ + \frac{8}{10}d \quad + \frac{8}{10}d \\ \hline 3 = \frac{5}{10}d + 5 \\ 3 = \frac{1}{2}d + 5 \\ -5 \quad -5 \\ \hline \frac{2}{1} \cdot -2 = \frac{1}{2}d \cdot \frac{2}{1} \\ -4 = d \end{array}$$

Calculator use okay on these (round answer to the nearest hundredth):

$$\begin{array}{r} 72.07x - 6.3 = 13 - 14.09x \\ + 14.09x \quad + 14.09x \\ \hline 86.16x - 6.3 = 13 \\ + 6.3 \quad + 6.3 \\ \hline 86.16x = 19.3 \\ \frac{86.16}{86.16} \quad \frac{19.3}{86.16} \\ x \approx 0.22 \end{array}$$

$$\begin{array}{r} -3.79x + 14.1 = -260.4 - 29.3x \\ + 29.3x \quad + 29.3x \\ \hline 25.51x + 14.1 = -260.4 \\ -14.1 \quad -14.1 \\ \hline 25.51x = -274.5 \\ \frac{25.51}{25.51} \quad \frac{-274.5}{25.51} \\ x \approx -10.76 \end{array}$$