

Name: Key Class: 7-1, 8-2

Topic: Variables on Both Sides Date: 10/1

Main Ideas/Questions Notes

Steps

- ✓ Step 1: Distribute if needed.
- ✓ Step 2: Simplify each side of the equation.
- ✓ Step 3: Move all variables terms to one side.
- ✓ Step 4: Solve the remaining 2-step equation.

Examples

ANSWERS:

1. $y = 10$
2. $x = -1$
3. $m = -7$
4. $d = -11$
5. $u = -2$
6. $w = 3$

$$\begin{array}{r}
 1. \ 5y - 8 = 3y + 12 \\
 \underline{-3y \quad -3y} \\
 2y - 8 = 12 \\
 \underline{+8 \quad +8} \\
 2y = 20 \\
 \underline{\quad \quad \quad} \\
 \frac{2y}{2} = \frac{20}{2} \quad y = 10
 \end{array}$$

$$\begin{array}{r}
 2. \ -6x + 14 = 12 - 8x \\
 \underline{+8x \quad +8x} \\
 2x + 14 = 12 \\
 \underline{-14 \quad -14} \\
 2x = -2 \\
 \underline{\quad \quad \quad} \\
 \frac{2x}{2} = \frac{-2}{2} \\
 x = -1
 \end{array}$$

$$\begin{array}{r}
 3. \ 9m = 4m - 35 \\
 \underline{-4m \quad -4m} \\
 5m = -35 \\
 \underline{\quad \quad \quad} \\
 \frac{5m}{5} = \frac{-35}{5} \\
 m = -7
 \end{array}$$

$$\begin{array}{r}
 4. \ 10 - d = -34 - 5d \\
 \underline{+5d \quad +5d} \\
 10 + 4d = -34 \\
 \underline{-10 \quad -10} \\
 4d = -44 \\
 \underline{\quad \quad \quad} \\
 \frac{4d}{4} = \frac{-44}{4} \\
 d = -11
 \end{array}$$

$$\begin{array}{r}
 5. \ 7 - 6u = 5u + 29 \\
 \underline{-5u \quad -5u} \\
 7 - 11u = 29 \\
 \underline{-7 \quad -7} \\
 -11u = 22 \\
 \underline{-11 \quad -11} \\
 u = -2
 \end{array}$$

$$\begin{array}{r}
 6. \ 4(2w - 1) = -10(w - 5) \\
 8w - 4 = -10w + 50 \\
 \underline{+10w \quad +10w} \\
 18w - 4 = 50 \\
 \underline{+4 \quad +4} \\
 18w = 54 \\
 \underline{\quad \quad \quad} \\
 \frac{18w}{18} = \frac{54}{18} \quad w = 3
 \end{array}$$

ANSWERS:

7. $x=10$

8. $m=-5$

9. $x=5$

10. $x=-6$

7. $6(x-1) = 9(x-4)$

$$\begin{array}{r} 6x-6 = 9x-36 \\ -9x \quad -9x \\ \hline \end{array}$$

$$\begin{array}{r} -3x-6 = -36 \\ +6 \quad +6 \\ \hline \end{array}$$

$$\frac{-3x}{-3} = \frac{-30}{-3} \quad x=10$$

8. $5(m+3) + 7m = 3(m-10)$

$$5m+15+7m = 3m-30$$

$$\begin{array}{r} 12m+15 = 3m-30 \\ -3m \quad -3m \\ \hline \end{array}$$

$$\begin{array}{r} 9m+15 = -30 \\ -15 \quad -15 \\ \hline \end{array}$$

$$\frac{9m}{9} = \frac{-45}{9} \quad m=-5$$

9. $5x - (x+4) = 10 - 2(x-8)$

$$5x-x-4 = 10-2x+16$$

$$\begin{array}{r} 4x-4 = -2x+26 \\ +2x \quad +2x \\ \hline \end{array}$$

$$\begin{array}{r} 6x-4 = 26 \\ +4 \quad +4 \\ \hline \end{array}$$

$$\frac{6x}{6} = \frac{30}{6} \quad x=5$$

10. $8(x-1) - 2x = -(x+50)$

$$8x-8-2x = -x-50$$

$$\begin{array}{r} 6x-8 = -x-50 \\ +x \quad +x \\ \hline \end{array}$$

$$\begin{array}{r} 7x-8 = -50 \\ +8 \quad +8 \\ \hline \end{array}$$

$$\frac{7x}{7} = \frac{-42}{7} \quad x=-6$$