

NAME _____

DATE _____

SOLVE LINEAR EQUATIONS: Worksheet 2

Simplify each expression using the distributive property.

1) $-2(x - 7)$

2) $3(5y - 4)$

3) $2(-6w + 5)$

Solve these one-step equations.

4) $x - 3 = -5$

5) $\frac{y}{-7} = 2$

6) $t + 1 = -12$

7) $4n = -60$

Solve these two-step equations.

8) $3x - 2 = 25$

9) $-2y - 8 = -6$

10) $\frac{t}{3} + 3 = 8$

11) $-5r - 1 = -41$

Solve these multi-step equations.

12) $5(y + 6) + y = 96$

13) $-4(2x - 1) + 6x = -2$

14) $9(2w - 1) + 4w - 10 = -85$

15) $2(t - 3) + 4(-2t + 3) = 6$

Solve these multi-step equations with variables on both sides.

16) $3(3z + 1) = 4(2z - 2)$

17) $-5(3y - 2) = -2y + 4y - 7$

18) $8(x + 3) + 4x = 3(4x + 8)$

19) $-2(w + 8) = 2(-w + 6)$

20) $2(r + 3) = -3(r - 1)$

KEY

SOLVE LINEAR EQUATIONS: Worksheet 2

Simplify each expression using the distributive property.

1) $-2(x - 7)$
 $-2x + 14$

2) $3(5y - 4)$
 $15y - 12$

3) $2(-6w + 5)$
 $-12w + 10$

Solve these one-step equations.

4) $x - 3 = -5$

$$\begin{aligned} x - 3 &= -5 \\ x - 3 + 3 &= -5 + 3 \\ x &= -2 \end{aligned}$$

5) $\frac{y}{-7} = 2$

$$\begin{aligned} \frac{y}{-7} &= 2 \\ \frac{y}{-7} \cdot -7 &= 2 \cdot -7 \\ y &= -14 \end{aligned}$$

6) $t + 1 = -12$

$$\begin{aligned} t + 1 &= -12 \\ t + 1 - 1 &= -12 - 1 \\ t &= -13 \end{aligned}$$

7) $4n = -60$

$$\begin{aligned} 4n &= -60 \\ \frac{4n}{4} &= \frac{-60}{4} \\ n &= -15 \end{aligned}$$

Solve these two-step equations.

8) $3x - 2 = 25$

$$\begin{aligned} 3x - 2 &= 25 \\ 3x - 2 + 2 &= 25 + 2 \\ 3x &= 27 \\ \frac{3x}{3} &= \frac{27}{3} \\ x &= 9 \end{aligned}$$

9) $-2y - 8 = -6$

$$\begin{aligned} -2y - 8 &= -6 \\ -2y - 8 + 8 &= -6 + 8 \\ -2y &= 2 \\ \frac{-2y}{-2} &= \frac{2}{-2} \\ y &= -1 \end{aligned}$$

10) $\frac{t}{3} + 3 = 8$

$$\begin{aligned} \frac{t}{3} + 3 &= 8 \\ \frac{t}{3} + 3 - 3 &= 8 - 3 \\ \frac{t}{3} &= 5 \\ \frac{t}{3} \cdot 3 &= 5 \cdot 3 \\ t &= 15 \end{aligned}$$

11) $-5r - 1 = -41$

$$\begin{aligned} -5r - 1 &= -41 \\ -5r - 1 + 1 &= -41 + 1 \\ -5r &= -40 \\ \frac{-5r}{-5} &= \frac{-40}{-5} \\ r &= 8 \end{aligned}$$

Solve these multi-step equations.

12) $5(y + 6) + y = 96$

$$\begin{aligned} 5(y + 6) + y &= 96 \\ 5y + 30 + y &= 96 \\ 6y + 30 &= 96 \\ 6y + 30 - 30 &= 96 - 30 \\ 6y &= 66 \\ y &= 11 \end{aligned}$$

13) $-4(2x - 1) + 6x = -2$

$$\begin{aligned} -4(2x - 1) + 6x &= -2 \\ -8x + 4 + 6x &= -2 \\ -2x + 4 &= -2 \\ -2x + 4 - 4 &= -2 - 4 \\ -2x &= -6 \\ x &= 3 \end{aligned}$$

14) $9(2w - 1) + 4w - 10 = -85$

$$\begin{aligned} 9(2w - 1) + 4w - 10 &= -85 \\ 18w - 9 + 4w - 10 &= -85 \\ 22w - 19 &= -85 \\ 22w - 19 + 19 &= -85 + 19 \\ 22w &= -66 \\ w &= -3 \end{aligned}$$

15) $2(t - 3) + 4(-2t + 3) = 6$

$$\begin{aligned} 2(t - 3) + 4(-2t + 3) &= 6 \\ 2t - 6 - 8t + 12 &= 6 \\ -6t + 6 &= 6 \\ -6t + 6 - 6 &= 6 - 6 \\ -6t &= 0 \\ t &= 0 \end{aligned}$$

Solve these multi-step equations with variables on both sides.

16) $3(3z + 1) = 4(2z - 2)$

$$\begin{aligned} 3(3z + 1) &= 4(2z - 2) \\ 9z + 3 &= 8z - 8 \\ 9z + 3 - 8z &= 8z - 8 - 8z \\ z + 3 &= -8 \\ z + 3 - 3 &= -8 - 3 \\ z &= -11 \end{aligned}$$

17) $-5(3y - 2) = -2y + 4y - 7$

$$\begin{aligned} -5(3y - 2) &= -2y + 4y - 7 \\ -15y + 10 &= 2y - 7 \\ -15y + 10 - 2y &= 2y - 7 - 2y \\ -17y + 10 &= -7 \\ -17y &= -17 \\ y &= 1 \end{aligned}$$

18) $8(x + 3) + 4x = 3(4x + 8)$

$$\begin{aligned} 8(x + 3) + 4x &= 3(4x + 8) \\ 8x + 24 + 4x &= 12x + 24 \\ 12x + 24 &= 12x + 24 \\ 12x + 24 - 12x &= 12x + 24 - 12x \\ 24 &= 24 \\ \text{All real numbers} \end{aligned}$$

19) $-2(w + 8) = 2(-w + 6)$

$$\begin{aligned} -2(w + 8) &= 2(-w + 6) \\ -2w - 16 &= -2w + 12 \\ -2w - 16 + 2w &= -2w + 12 + 2w \\ -16 &= 12 \\ \text{No solution} \end{aligned}$$

20) $2(r + 3) = -3(r - 1)$

$$\begin{aligned} 2(r + 3) &= -3(r - 1) \\ 2r + 6 &= -3r + 3 \\ 2r + 6 + 3r &= -3r + 3 + 3r \\ 5r + 6 &= 3 \\ 5r + 6 - 6 &= 3 - 6 \\ 5r &= -3 \\ \frac{5r}{5} &= \frac{-3}{5} \\ r &= -\frac{3}{5} \end{aligned}$$