

Lots of Variables - NOTES

Simplify each expression.

1) $4x + 2x$

$$\boxed{6x}$$

2) $5 + 2k + 6$

$$\boxed{-1 + 2k \text{ or } -1 - 2k}$$

3) $-5m - 4m$

$$\boxed{-9m}$$

4) $-8m + 7m$

$$\boxed{-1m}$$

5) $4 + 7n + 8n$

$$\boxed{4 + 15n}$$

6) $1 + 10n + 2$

$$\boxed{-10n - 1}$$

Solve each equation.

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

$$\begin{array}{r} 7 = 7 + 6x \\ -7 \quad -7 \end{array}$$

$$\frac{0 = 6x}{6}$$

$$\boxed{0 = x}$$

9) $-11 - 3m = -8m + 4 + 3$

$$\begin{array}{r} -11 - 3m = -8m - 1 \\ \quad + 8m \quad + 8m \end{array}$$

$$\begin{array}{r} +11 + 5m = -1 \\ +11 \quad \quad +11 \end{array}$$

$$\frac{5m = 10}{5}$$

$$\boxed{m = 2}$$

8) $-124 = 6(8x - 3) + 5x$

$$-124 = 48x + 18 + 5x$$

$$\begin{array}{r} -124 = 53x - 18 \\ \quad + 18 \quad \quad + 18 \end{array}$$

$$\frac{-106 = 53x}{53}$$

$$\boxed{-2 = x}$$

10) $8v + 2 - 8v = 14 + 4v + 7v$

$$\begin{array}{r} 2 = 14 + 3v \\ -14 \quad -14 \end{array}$$

$$\frac{-12 = 3v}{3}$$

$$\boxed{-4 = v}$$

$$11) \quad \overbrace{-8x + 7x} = -4x + 9$$

$$\begin{array}{r} -1x = -4x + 9 \\ +4x \quad +4x \end{array}$$

$$\frac{3x}{3} = \frac{9}{3}$$

$$\boxed{x = 3}$$

$$12) \quad -12 + \overbrace{2x + x} = -3x + 6$$

$$\begin{array}{r} -12 + 3x = -3x + 6 \\ +3x \quad +3x \end{array}$$

$$\begin{array}{r} -12 + 6x = 6 \\ +12 \quad +12 \end{array}$$

$$\frac{6x}{6} = \frac{18}{6}$$

$$\boxed{x = 3}$$

$$13) \quad 2x + 11 = \cancel{x} + 4$$

$$\begin{array}{r} -1x \quad -1x \\ 1x + 11 = 4 \\ -11 \quad -11 \end{array}$$

$$\begin{array}{r} 1x + 11 = 4 \\ -11 \quad -11 \end{array}$$

$$1x = -7$$

$$\boxed{x = -7}$$

$$14) \quad 1 + \overbrace{7n} = -2n + 6$$

$$\begin{array}{r} +7n \quad +7n \\ 1 = -2n + 6 \\ -6 \quad -6 \end{array}$$

$$\begin{array}{r} 1 = -2n + 6 \\ -6 \quad -6 \end{array}$$

$$\frac{-5}{5} = \frac{5n}{5}$$

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

$$15) \quad -8(-8 - 7r) = 4 - 4r$$

$$\begin{array}{r} 64 + 56r = 4 - 4r \\ +4r \quad +4r \end{array}$$

$$\begin{array}{r} 64 + 60r = 4 \\ -64 \quad -64 \end{array}$$

$$\frac{60r}{60} = \frac{-60}{60}$$

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

$$16) \quad -6(-8x + 4) = -24 + x$$

$$\begin{array}{r} 48x - 24 = -24 + x \\ -48x \quad -48x \end{array}$$

$$\begin{array}{r} -24 = -24 + x \\ +24 \quad +24 \end{array}$$

$$\frac{0}{-47} = \frac{-47x}{-47}$$

$$\boxed{0 = x}$$