

## 1.5 DISTRIBUTIVE PROPERTY

$$a(b + c) = ab + ac \quad \text{OR} \quad a(b - c) = ab - ac$$

EXAMPLES: Use the distributive property to simplify each expression.

$$1. \quad 5(x + 2)$$

$$5 \cdot x + 5 \cdot 2$$

$$\boxed{5x + 10}$$

$$2. \quad (y - 9)3 \quad \text{or} \quad 3(y - 9)$$

$$3 \cdot y - 3 \cdot 9$$

$$\boxed{3y - 27}$$

$$3. \quad 4(3k + 8m)$$

$$\boxed{12k + 32m}$$

$$4. \quad (7a - 11b)2$$

$$\boxed{14a - 22b}$$

$$5. \quad 1.2(x + 7)$$

$$\boxed{1.2x + 8.4}$$

$$6. \quad (u - 1)(4.8)$$

$$\boxed{4.8u - 4.8}$$

$$7. \quad \frac{1}{2}(4f + 15)$$

$$\boxed{2f + \frac{15}{2}}$$

$$8. \quad \frac{1}{3}(6y - 15z)$$

$$\boxed{2y - 5z}$$

Use the distributive property to find each product.

$$\begin{array}{l}
 9. \quad 5 \cdot 97 \\
 \quad 5(100 - 3) \\
 \quad 500 - 15 \\
 \quad \boxed{485}
 \end{array}$$

$$\begin{array}{l}
 10. \quad 16(102) \\
 \quad 16(100 + 2) \\
 \quad 1600 + 32 \\
 \quad \boxed{1632}
 \end{array}$$

$$\begin{array}{l}
 11. \quad 9(10.6) \\
 \quad 9(10 + .6) \\
 \quad 90 + 5.4 \\
 \quad \boxed{95.4}
 \end{array}$$

$$\begin{array}{l}
 12. \quad 12 \cdot 4.5 \\
 \quad 12(5 - .5) \\
 \quad 60 - 6 \\
 \quad \boxed{54}
 \end{array}$$

**term**- a number, a variable, or a product or quotient of numbers and variables

$$\begin{array}{ccc}
 x & & 4 \\
 & & \frac{k}{9} \\
 & & \frac{1}{2}y
 \end{array}$$

**like terms**- terms that contain the same variables and their exponents are the same

$$3x \ \& \ -10x \qquad \frac{1}{2}y^2 \ \& \ 10,000y^2$$

An expression is **simplified** if it has no grouping symbols and if all the like terms have been combined.

Simplify the expressions below:

$$13. \quad 8x + 3x = \boxed{11x}$$

$$14. \quad 4g^2 + 7g^2 - 5g^2 = \boxed{6g^2}$$

$$15. \quad 6.2y - 3.2y = \boxed{3y}$$

Simplify the expressions below:

$$16. \quad \frac{4}{5}x^2y - \frac{2}{5}x^2y = \boxed{\frac{2}{5}x^2y}$$

$$17. \quad \frac{6xy^3}{5} + \frac{7xy^3}{5} = \frac{6}{5}xy^3 + \frac{7}{5}xy^3$$
$$= \boxed{\frac{13}{5}xy^3 \text{ or } \frac{13xy^3}{5}}$$

The coefficient is the numerical part of a term.

Name the coefficient in each term:

18.  $15ab$       $\boxed{15}$

19.  $1h^2$       $\boxed{1}$

20.  $\frac{1r}{4}$       $\boxed{\frac{1}{4}}$

21.  $\frac{5x^2}{7}$       $\boxed{\frac{5}{7}}$

Simplify the expressions below:

22.  $6a^2 + 4d - 1d + 12a^2$   
 $\boxed{18a^2 + 3d}$

23.  $\frac{b}{2} + b$   
 $\frac{1}{2}b + 1b = \frac{1}{2}b + \frac{2}{2}b = \boxed{\frac{3}{2}b}$

24.  $\frac{5}{6}m - \frac{m}{6} + 4m^2$   
 $\frac{5}{6}m - \frac{1}{6}m + 4m^2 = \frac{4}{6}m + 4m^2 = \boxed{\frac{2}{3}m + 4m^2}$