

Section 1-7: Distributive Property

Objectives: 1) To use the Distributive Property to simplify expressions.

To solve problems in mathematics, it is often useful to rewrite expressions in simpler forms. The Distributive Property is another property of real numbers that helps you simplify expressions.

$$\begin{aligned} a(b+c) &= ab+ac & (b+c)a &= ba+ca \\ a(b-c) &= ab-ac & (b-c)a &= ba-ca \end{aligned}$$

**Problem 1 – Using the Distributive Property**

a)  $4(x+3)$   
 $4x+12$

b)  $(2r-3)(2)$   
 $4r-6$

c)  $\frac{1}{2}(\frac{1}{2}m-4)$   
 $\frac{1}{4}m-2$

d)  $6.5(v+1)$   
 $6.5v+6.5$

e)  $-(2y-3x)$   
 $-2y+3x$

**Problem 2 – Simplify the expression using like terms and/or the Distributive Property**

a)  $2(3x-5+4x)$   
 $6x-10+8x$   
 $14x-10$

b)  $2x^2-9x^2$   
 $-7x^2$

c)  $5-3x+y+6$   
 $-3x+y+11$

### The Distributive Property and Like Terms

Simplify each expression.

1.  $5(m+2)$   
 $5m+10$

2.  $-8(p-3)$   
 $-8p+24$

3.  $(3+x)(-2)$   
 $-6-2x$

4.  $\frac{2}{3}(6n-9)$   
 $4n-6$

Simplify each expression including combining like terms.

5.  $6y+2(y+1)$   
 $6y+2y+2$   
 $8y+2$

6.  $2(4a-1)+a$   
 $8a-2+a$   
 $9a-2$

7.  $(x-3)(2)+17x$   
 $2x-6+17x$   
 $19x-6$

8.  $\frac{1}{2}+3(2x+\frac{1}{6})$   
 $\frac{1}{2}+6x+\frac{1}{2}$   
 $6x+1$

Identify and circle the mistake, then show the correct work for simplifying.

9.  $8+2(3p+1)$   
 $= 10(3p+1)$   
 $= 30p+10$

Need to distribute first.

$$8+2(3p+1)$$
$$8+6p+2$$
$$10+6p$$

10.  $3d-2(d-4)$   
 $= 3d-2d-8$   
 $= 1d-8$

$$3d-2d+8$$
$$d+8$$