

## Lesson 9-3

## Example 1

Simplify.

a.  $(9x)(8y)$

b.  $(-11r)(-7s)$

c.  $1\frac{3}{4}c2(-8d)$

## Solution

a.  $(9x)(8y) = (9)(8)(x)(y)$  Use the Commutative and Associative Properties.  
 $= 72xy$

b.  $(-11r)(-7s) = (-11)(-7)(r)(s) = 77rs$

c.  $1\frac{3}{4}c2(-8d) = 1\frac{3}{4}2(-8)(c)(d) = -6cd$

## Example 2

Simplify.

a.  $z^3 \cdot z^5$

b.  $(-6j)(-7j^4)$

c.  $(x^3y^5)(x^7y)$

## Solution

a.  $z^3 \cdot z^5 = z^{3+5} = z^8$

b.  $(-6j)(-7j^4) = (-6)(-7)(j \cdot j^4)$   $j$  means  $j^1$ .  
 $= 42j^{1+4} = 42j^5$

c.  $(x^3y^5)(x^7y) = (x^3 \cdot x^7)(y^5 \cdot y)$   
 $= x^{3+7} \cdot y^{5+1}$   
 $= x^{10}y^6$  Use the product rule for each base,  $x$  and  $y$ .  
 Because  $x$  and  $y$  are unlike bases, you cannot add the exponents.

**Example 3****Simplify.**

**a.**  $(m^3)^6$

**b.**  $(w^7)^9$

**Solution**

**a.**  $(m^3)^6 = m^{3 \cdot 6} = m^{18}$

**b.**  $(w^7)^9 = w^{7 \cdot 9} = w^{63}$

**Example 4****Simplify.**

**a.**  $(4y)^3$

**b.**  $-(7z^4)^2$

**c.**  $(-2d^3)^5$

**Solution**

**a.**  $(4y)^3 = (4^3)(y)^3$   
 $= 64y^3$

**b.**  $-(7z^4)^2 = -(7)^2(z^4)^2$   
 $= -49y^{4 \cdot 2}$   
 $= -49y^8$

**c.**  $(-2d^3)^5 = (-2)^5(d^3)^5$   
 $= -32d^{3 \cdot 5}$   
 $= -32d^{15}$