## 8-3, 4 Multiplication Properties of Exponents

You can write the product of powers with the same base, like  $2^4 \cdot 2^2$ , using one exponent.

$$2^4 \cdot 2^2 =$$

$$a^{3} \cdot a^{4} =$$

In, general, when we multiply powers with the same base we \_\_\_\_\_

Let's Look at some Completed Examples

EX1:

Helpful Hints to Remember:

$$2n^5 \cdot 3n^{-2} = 6n^3$$

EX2:

$$(4c^4)(ac^3)(3a^5c) = 12a^6c^8$$

Try a Few:

1. $d^{-2}d^7 =$	2. $(7x^5)(8x) =$	3. $5t^{-2}2t^{-5} =$
4. $(9r^2s^{-5})(4rs) =$	5. $(x^5y^2)(x^{-6}y) =$	6. $-m^2 \cdot 4r^3 \cdot 3r^5 \cdot 5m =$

Take a look at these next examples. To simplify powers raised to another power, we simply write out the expression in expanded form and then multiply.

$$(5^4)^2 =$$

$$(a^2)^5 =$$

EX1:

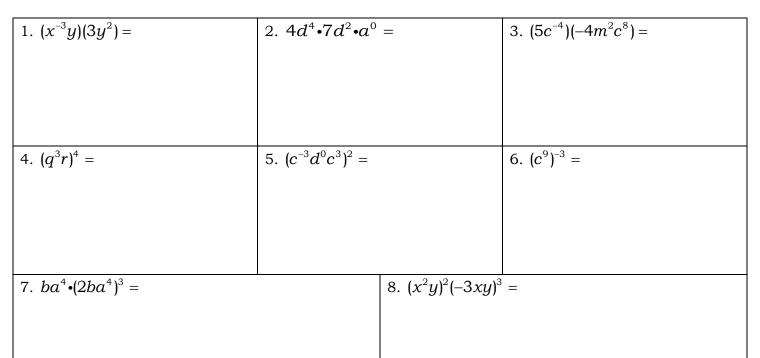
Helpful Hints to Remember:

$$(3c^5)^3 = (3c^5)(3c^5)(3c^5) = 27c^{15}$$

Try a Few:

1. $(-5y^2)^3 =$	$2. x^2 (2xy)^3 =$
$3. (a^{-2})^3 a^{-12} =$	4. $(3b^{-2})^2(a^2b^4)^3 =$

Mixed Review:



## Simplify using positive exponents.

1. (2x)(3x)

2.  $(3x^2)^2(-2xy)$ 

3.  $(3a)^2$ 

4.  $b(3b)^3$ 

5.  $(2x^2y^3)(-4xy^{-4})$ 

6.  $(-3y)(7y^4z^{-2})$ 

7. (-8ab<sup>3</sup>)(-5ab<sup>-3</sup>c)

8.  $3x(2x)^4$