**7-1 Notes: *Multiplication Properties of Exponents***

$ x^{6}$

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_OR \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Multiply Monomials** A **monomial** is a number, a variable, or the product of a number and one or more variables with nonnegative integer exponents. An expression of the form $x^{n}$is called a **power** and represents the product you obtain when *x* is used as a factor *n* times. To multiply two powers that have the same base, add the exponents.

|  |  |
| --- | --- |
| **Product of Powers** |  |

**Example 1: Simplify (3**$x^{6}$**)(5**$x^{2}$**).**

**Example 2:** **Simplify (–4**$a^{3}$***b*)(3**$a^{2}b^{5}$**).**

**Exercises**

**Simplify each expression.**

 **1.** *y*($y^{5}$) **2.** $n^{2}$ ⋅ $n^{7}$ **3.** (–7$x^{2}$)($ x^{4}$)

 **4.** (2$a^{2}$)(8*a*)**5.** (*rn*)(*r*$n^{3}$)($n^{2}$)**6.** ($x^{2}$*y*)(4*x*$y^{3}$)

**7-1 Notes: *Multiplication Properties of Exponents***

**Simplify Expressions** An expression of the form $(x^{m})^{n}$ is called a **power of a power** and represents the product you obtain when $x^{m}$is multiplied *n* times. To find the power of a power, **multiply exponents**.

|  |  |
| --- | --- |
| **Power of a Power** |  |
| **Power of a Product** |  |

We can combine and use these properties to simplify expressions involving monomials.

**Example 1: Simplify** $(-2ab^{2})^{3}$**(**$a^{2}$**)4.**

**Example 2: Simplify** $(-3j^{2}k^{3})^{2}(2j^{2}k)^{3}$

**Exercises**

 **1.** $(y^{5})^{2}$ **2.** $(n^{7})^{4}$ **3.** $\left(x^{2}\right)^{5}$($x^{3}$)

 **4.** –3$(ab^{4})^{3}$ **5.** $(-3ab^{4})^{3}$**6.** $(4x^{2}b)^{3}$

 **7.** $(4a^{2})^{2}$($b^{3}$) **8.** $(4x)^{2}$($b^{3}$) **9.** $(x^{2}y^{4})^{5}$