

## Chapter 8: Apply Exponent Properties

### Study Guide Answer Key

#### 8.1: Apply Exponent Properties Involving Products:

**Ex:**  $(-18m^2n)^2\left(-\frac{1}{6}mn^2\right)$

$$\boxed{-54m^5n^4}$$

**Ex:**  $-3(2x)^4(4x^5y)^2$

$$\boxed{-768x^{14}y^2}$$

**Ex:**  $(25a^2b)^3\left(\frac{1}{5}abc\right)^2$

$$\boxed{625a^8b^5c^2}$$

**Ex:**  $(-4xy)^3(-2x^2)^3$

$$\boxed{512x^9y^3}$$

#### 8.2: Apply Exponent Properties Involving Quotients:

**Ex:**  $\left(\frac{3x^7}{2y^{12}}\right)^4$

$$\boxed{\frac{81x^{28}}{16y^{48}}}$$

**Ex:**  $\left(-\frac{6}{x}\right)^3\left(\frac{x^4}{3y^7}\right)^5$

$$\boxed{-\frac{8x^{17}}{9y^{35}}}$$

**Ex:**  $\frac{3y^{20}}{5}\left(\frac{10x^7}{9y^8}\right)^2$

$$\boxed{\frac{20x^{14}y^4}{27}}$$

**Ex:**  $\frac{1}{4x^5}\left(\frac{2x^2}{y^3}\right)^5$

$$\boxed{\frac{8x^{15}}{y^{15}}}$$

### 8.3: Zero and Negative Exponents:

$$\text{Ex: } \left( \frac{-16p^5q^2}{2p^3q^3} \right)^0$$

$$\boxed{1}$$

$$\text{Ex: } \frac{48x^6y^7z^5}{-6xy^5z^6}$$

$$\boxed{-\frac{8x^5y^2}{z}}$$

$$\text{Ex: } \frac{(-2mn^2)^{-3}}{4m^{-6}n^4}$$

$$\boxed{-\frac{m^3}{32n^{10}}}$$

$$\text{Ex: } \left( \frac{2x^3y^2z}{3x^4yz^{-2}} \right)^{-2}$$

$$\boxed{\frac{9x^2}{4y^2z^6}}$$

### 8.4 Scientific Notation:

Ex: Write the following number in scientific notation: 56,350,000

$$5.635 \times 10^7$$

Ex: Write the following number in scientific notation: 0.00000007385

$$7.385 \times 10^{-8}$$

Ex: Write the following number in standard notation:  $5.0735 \times 10^6$

$$5,073,500$$

Ex: Write the following number in standard notation:  $1.2736 \times 10^{-4}$

$$0.00012736$$

**Multiply or divide. Express your answer in scientific notation:**

$$\text{Ex: } (1.5 \times 10^{10})(4 \times 10^5)$$

$$6 \times 10^{15}$$

$$\text{Ex: } \frac{(2.32 \times 10^{-3})}{(5.8 \times 10^{-7})}$$

$$0.4 \times 10^{-1} = 4 \times 10^{-2}$$