

Name \_\_\_\_\_  
Mrs. Roubos

Date \_\_\_\_\_  
8R Period \_\_\_\_\_

### Properties of Exponents

#### I. Multiplying Powers with the same base

A) When you **multiply** powers with the same base, you \_\_\_\_\_ the base and \_\_\_\_\_ the exponents.

B) Examples: Simplify

1)  $6^6 \cdot 6^3 =$

2)  $n^5 \cdot n^7 =$

3)  $2^5 \cdot 2 =$

4)  $3^4 \cdot 3^{-4} =$

5)  $x^5 \cdot y^2 =$

6)  $4^2 \cdot 4^{-5} =$

#### II. Dividing Powers with the same base

A) When you **divide** powers with the same base, you \_\_\_\_\_ the base and \_\_\_\_\_ the exponents.

B) Examples: Simplify

$$1) \frac{7^5}{7^3} =$$

$$2) \frac{x^{10}}{x^9} =$$

$$3) \frac{5^8}{5^2} =$$

$$4) \frac{4^4}{4^4} =$$

$$5) \frac{2^3}{2^5} =$$

$$6) \frac{8^8}{8^{11}} =$$

III. Raising a Power to a Power

A) To raise a power to a power, \_\_\_\_\_ the base and \_\_\_\_\_ the exponents.

B) Examples: Simplify

$$1) (5^4)^2 =$$

$$2) (6^7)^9 =$$

$$3) (2^2)^{-3} =$$

$$4) (3^{-3})^0 =$$

IV. Mixed Examples: Simplify

$$1) 5^6 \cdot 5^9 =$$

$$2) 12^3 \cdot 12^{-2} =$$

$$3) m \cdot m^3 \cdot m^4 =$$

$$4) \frac{6^5}{6^3} =$$

$$5) \frac{a^8}{a^{-1}} =$$

$$6) \frac{12^5}{12^5} =$$

$$7) (3^4)^5 =$$

$$8) (2^2)^0 =$$

$$9) (4^{-2})^3 =$$

$$10) \frac{7^6}{7^8} =$$

$$11) 3^2 \cdot 3^3 \cdot 3^5 =$$

$$12) (4^0)^3 =$$