

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Notes

Algebra Section 8.1

Pages 489-494

**Goal:** "Use properties of exponents involving products"



1.

2.

3.

**Write the following expressions out as products:**

$$a^2 =$$

$$a^3 =$$

**So then how would you multiply....?**

$$a^2 \cdot a^3$$

**Can you come up with a rule to multiply expressions that have the same base and also have exponents?**

**Use the rule to multiply the following. Write your answer as an exponent:**

**Ex:**  $7^3 \cdot 7^5$

**Ex:**  $4^7 \cdot 4^6$

**Ex:**  $9 \cdot 9^8 \cdot 9^2$

**Ex:**  $8^5 \cdot 8 \cdot 8^2$

**Ex:**  $(-5)(-5)^6$

**Ex:**  $(-3)^3(-3)$

**Ex:**  $x^7 \cdot x^3$

**Ex:**  $b \cdot b^3 \cdot b^5 \cdot b^2$

**Write out the following expression as a product:**

$$(a^2)^3 =$$

**Can you come up with a rule to simplify an expression with an exponent raised to a power?**

**Use the rule to simplify the following expressions. Write your answer as an exponent:**

**Ex:**  $(3^4)^2$

**Ex:**  $(2^5)^3$

**Ex:**  $[(-6)^5]^2$

**Ex:**  $[(y + 2)^2]^6$

**Ex:**  $(4^2)^7$

**Ex:**  $(2^7)^4$

**Ex:**  $(y^3)^3$

**Ex:**  $[(n + 8)^2]^9$

**Write out the following expression a product:**

$$(ab)^3 =$$

**Can you come up with a rule to simplify a product being raised to a power?**

**Use your rule to simplify the following expressions. Write your answer as an exponent:**

**Ex:**  $(23 \cdot 17)^5$

**Ex:**  $(24 \cdot 13)^8$

**Ex:**  $(34 \cdot 9)^6$

**Simplify the following expressions:**

**Ex:**  $(9xy)^2$

**Ex:**  $(-4z)^2$

**Ex:**  $-(4z)^2$

**Ex:**  $(9m^3n^4)^2$

**Ex:**  $(4mn)^3$

**Ex:**  $(-2g)^4$

**Ex:**  $-(5x)^2$

**Ex:**  $(2x^3)^2 \cdot x^4$

**Ex:**  $(3d^5)^2 \cdot d$

**Ex:**  $5 \cdot (5x^2)^4$