



Topic/Objective: AGS 2 Module 3.1

Name:

Properties of Exponents

Period:

Date:

**Essential Question:** When simplifying, when do you add, subtract, and multiply exponents?

Questions:

**Properties of Exponents:**

Rule:  $x^a \cdot x^b = x^{a+b}$

1.  $3^2 \cdot 3^5 =$

2.  $x^4 \cdot x^{10} =$

Rule:  $(x^a)^b = x^{a \cdot b}$

3.  $(3^2)^5 =$

4.  $(x^4)^{10} =$

Rule:  $(xy)^a = x^a \cdot y^a$

5.  $(2 \cdot 3)^4 =$

6.  $(xy)^4 =$

Rule:  $\left(\frac{x}{y}\right)^a = \frac{x^a}{y^a}, y \neq 0$

7.  $\left(\frac{2}{3}\right)^3 =$

8.  $\left(\frac{x}{y}\right)^3 =$

Rule:  $\frac{x^a}{x^b} = x^{a-b}, x \neq 0$

9.  $\frac{3^5}{3^2} =$

10.  $\frac{x^5}{x^3} =$

Rule:  $x^0 = 1, x \neq 0$

11.  $8^0 =$

12.  $253^0 =$

**Simplify. Leave answers in exponential form.**

1.  $\frac{5^3}{5^2} =$

2.  $17^0 =$

3.  $\frac{7^5}{7^2} \cdot \frac{7^3}{7^4} =$

4.  $7^3 \cdot 7^5 \cdot 7^2 =$

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

6.  $(5^3)^4 \cdot 5^7 =$

7.  $x^3 \cdot x^5 =$

8.  $\frac{(y^a)^c}{y^b}$

9.  $\frac{(3^4)^6}{3^7}$

10.  $\frac{r^5 s^3}{r s^2} =$

11.  $\frac{x^5 y^{12} z^0}{x^8 y^9} =$

12.  $2n^4 \cdot 5n^4 =$

13.  $6k^2 \cdot k =$

14.  $6m^3 n^3 \cdot 8m^2 n^3 =$

15.  $7(k)^2 =$

16.  $(7k)^2 =$

17.  $\left(\frac{x^5}{x^3}\right)^4 =$

18.  $\frac{4y^4}{14yz^8} =$

19.  $\frac{6x^3 y^4 z^2}{9x^5 y z^2} =$

