

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



## EXPONENTS: POWER TO A POWER

The Power Rule

$$(a^b)^c = a^{b \times c}$$

**PART I:** Use the power rule to solve each of the following. The first problem has already been solved for you.

1.  $(7^2)^3 = \underline{7^6}$

7.  $(2^7)^3 = \underline{\hspace{2cm}}$

2.  $(2^5)^4 = \underline{\hspace{2cm}}$

8.  $(16^6)^8 = \underline{\hspace{2cm}}$

3.  $(10^6)^2 = \underline{\hspace{2cm}}$

9.  $(5^{12})^4 = \underline{\hspace{2cm}}$

4.  $(8^4)^4 = \underline{\hspace{2cm}}$

10.  $(13^{14})^6 = \underline{\hspace{2cm}}$

5.  $(12^4)^2 = \underline{\hspace{2cm}}$

11.  $(24^6)^{11} = \underline{\hspace{2cm}}$

6.  $(3^9)^3 = \underline{\hspace{2cm}}$

12.  $(6^9)^3 = \underline{\hspace{2cm}}$

**PART II:** Use the power rule to solve each of the following. The first problem has already been solved for you.

13.  $(x^5)^2 = \underline{x^{10}}$

19.  $(w^7)^9 = \underline{\hspace{2cm}}$

14.  $(y^4)^9 = \underline{\hspace{2cm}}$

20.  $(x^{14})^4 = \underline{\hspace{2cm}}$

15.  $(c^2)^2 = \underline{\hspace{2cm}}$

21.  $(y^7)^7 = \underline{\hspace{2cm}}$

16.  $(m^{12})^{10} = \underline{\hspace{2cm}}$

22.  $(z^3)^{17} = \underline{\hspace{2cm}}$

17.  $(g^{11})^2 = \underline{\hspace{2cm}}$

23.  $(r^{25})^5 = \underline{\hspace{2cm}}$

18.  $(x^{15})^4 = \underline{\hspace{2cm}}$

24.  $(x^{16})^6 = \underline{\hspace{2cm}}$

## ANSWER KEY

### PART I:

1.  $(7^2)^3 = \underline{7^6}$

2.  $(2^5)^4 = 2^{20}$

3.  $(10^6)^2 = 10^{12}$

4.  $(8^4)^4 = 8^{16}$

5.  $(12^4)^2 = 12^8$

6.  $(3^9)^3 = 3^{27}$

7.  $(2^7)^3 = 2^{21}$

8.  $(16^6)^8 = 16^{48}$

9.  $(5^{12})^4 = 5^{48}$

10.  $(13^{14})^6 = 13^{84}$

11.  $(24^6)^{11} = 24^{66}$

12.  $(6^9)^3 = 6^{27}$

### PART II:

13.  $(x^5)^2 = \underline{x^{10}}$

14.  $(y^4)^9 = y^{36}$

15.  $(c^2)^2 = c^4$

16.  $(m^{12})^{10} = m^{120}$

17.  $(g^{11})^2 = g^{22}$

18.  $(x^{15})^4 = x^{60}$

19.  $(w^7)^9 = w^{63}$

20.  $(x^{14})^4 = x^{56}$

21.  $(y^7)^7 = y^{49}$

22.  $(z^3)^{17} = z^{51}$

23.  $(r^{25})^5 = r^{125}$

24.  $(x^{16})^6 = x^{96}$