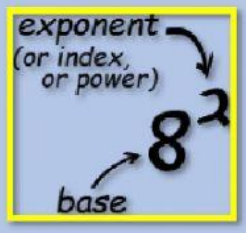
Powers and Exponents

Exponents are also called **Powers** or **Indices**



The exponent of a number says **how many times** to use the number in a **multiplication.**

In this example: $\mathbf{8^2 = 8 \times 8 = 64}$

In words: 8^2 could be called "8 to the second power", "8 to the power 2" or simply "8 squared"

So an Exponent saves us writing out lots of multiplies!

Example: a^7

$a^7 = a \times a \times a \times a \times a \times a \times a = aaaaaaa$

Example: $10 \times 10 \times 10 = 1,000$

Each 10 is a **factor**

1,000 is the **product**.

1,000 is a **power** of 10.

You can use an exponent to tell how many times 10 is used as a factor.

$\mathbf{10^{3\ \text{exponent}} = 10 \times 10 \times 10 = 1,000}$

Read $\mathbf{10^3}$ as ten to the third power.

Look for a pattern in the chart. Compare the number of zeros in the number with the exponent in the exponent form.

Number	Factor Form	Exponent Form	Read
100	10×10	10^2	ten to the second power or ten squared
1,000	$10 \times 10 \times 10$	10^3	ten to the third power or ten cubed
10,000	$10 \times 10 \times 10 \times 10$	10^4	ten to the fourth power

LIVEWORKSHEETS

Answer the following questions

1. What is the base in 6^2?

a. 2 c) 12

b. 6 d) 36

2. What is the exponent in 3^4

a. 3 c) 4

b. 9 d) 12

3. The exponential form of 64 is

a) 3^6 c) 8^3

b) 2^6 d) 9^2

4. Write the factor form of 200. _____

5. Write the factor form of 10,000. _____

6. Write the factor form of 10^6. _____

Multiply to find the numbers.

7. 10^7= _____

8. 10^4= _____

9. 4^3= _____

10. 10^5= _____

11. 2^6= _____

12. 8^2= _____

13. Write the numbers.

14. 8 x 1,000 = _____

15. 4 x 10^6= _____

16. 2 x 10 x 10 = _____

17. 3 x 10^4= _____

18. 5^3= _____

LIVEWORKSHEETS