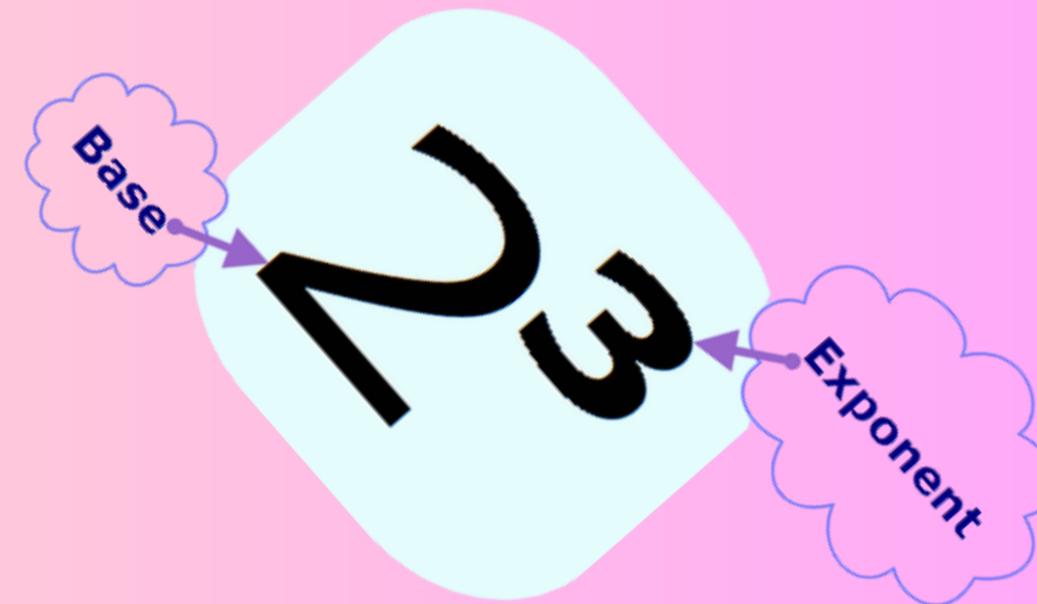


# EXONENT AND BASE



$$x = \sqrt[2]{x^2}$$

An **exponent** indicates the power to which the base is raised.

For example, in  $3^2$ , 3 is the base, and 2 is the exponent. The exponent tells you how many times to multiply the base by itself.

For example  $3^2$  therefore you can multiply the base or 3, 2 times  $3 \times 3 = 9$

# Another example $3^4$

$$3 \times 3 \times 3 \times 3$$

The diagram illustrates the calculation of  $3^4$  as a multiplication of four factors of 3. It shows four arrows pointing from the number 3 to the first three factors in the expression  $3 \times 3 \times 3 \times 3$ . Below the expression, there is a multiplication sign ( $\times$ ) between the second and third factors. A large arrow points from the result of the multiplication of the first three factors (which is 9) to the final product, 81.

**Note:** Base with the value of positive integers but **NOT** equal to zero, that raise to zero is 1.

$$n^0 = 1 \quad n \neq 0$$

## Example:

Write and evaluate the exponential notation of  $5 \times 5 \times 5 \times 5$

## Solution:

$5^4$

The diagram shows the expression  $5^4$ . Two arrows point from the expression to labels below it. One arrow points from the '5' to a pink box labeled 'Base'. Another arrow points from the '4' to a green box labeled 'Exponent'. To the right of the expression, the text 'the base is 5 and exponent is 4' is written.

the base is 5 and exponent is 4

Base Exponent

Use 5 as a base as a factor 4 times;  
therefore:  $5 \times 5 \times 5 \times 5$