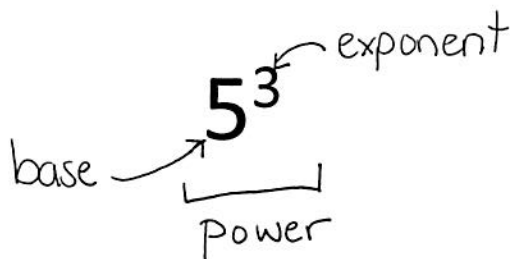


What is a Power?

NOTES

Parts of a Power



3 ways to represent:

1. Power	3^2
2. Repeated Multiplication	3×3
3. Standard Form (Value)	9

You Try

Power	Repeated Multiplication	Standard Form
2^4	$2 \times 2 \times 2 \times 2$	16
3^3	$3 \times 3 \times 3$	27
2^6	$2 \times 2 \times 2 \times 2 \times 2 \times 2$	64
8^2	8×8	64

Terminology

Any power with an integer base and an exponent 2 is a SQUARE. Ex: 3^2 (three squared)



Any power with an integer base and an exponent 3 is a CUBE. Ex: 3^3 (three cubed)



For 3^4 we say "three to the 4th"
For 3^5 we say "three to the 5th" etc...

Zero exponents

$$10^4 \rightarrow 10\,000$$

$$10^3 \rightarrow 1000$$

$$10^2 \rightarrow 100$$

$$10^1 \rightarrow 10$$

$$10^0 \rightarrow 1$$

$$\begin{array}{l} 3^3 = 27 \\ 3^2 = 9 \\ 3^1 = 3 \\ 3^0 = 1 \end{array} \quad \begin{array}{l} \swarrow \div 3 \\ \swarrow \div 3 \\ \swarrow \div 3 \end{array}$$

Zero Exponent Law:

A power with an integer base, other than 0, and an exponent 0 is equal to ONE.
 $n^0 = 1, n \neq 0$

Negative Bases

$$(-3)^3 \rightarrow (-3) \times (-3) \times (-3) = -27$$

$$(-3)^4 \rightarrow (-3) \times (-3) \times (-3) \times (-3) = +81$$

*Multiplying an even number of negative factors results in a POSITIVE answer.

*Multiplying an odd number of negative factors results in a NEGATIVE answer.

— The base is 3, not (-3)

$$-3^4 \rightarrow -(3 \times 3 \times 3 \times 3) = -81$$

(The exponent applies only to the base 3, not the negative sign)

$$-(-3^4) \rightarrow -(-(3 \times 3 \times 3 \times 3))$$

$$\begin{array}{l} -(-81) \\ \text{Negative of Negative } 81 = +81 \\ \text{+81} \end{array}$$