

# SQUARE

- $1^2 = 1$
- $2^2 = 4$
- $3^2 = 9$
- $4^2 = 16$
- $5^2 = 25$
- $6^2 = 36$
- $7^2 = 49$
- $8^2 = 64$
- $9^2 = 81$
- $10^2 = 100$
- $11^2 = 121$
- $12^2 = 144$
- $13^2 = 169$
- $14^2 = 196$
- $15^2 = 225$

# CUBE

- $1^3 = 1$
- $2^3 = 8$
- $3^3 = 27$
- $4^3 = 64$
- $5^3 = 125$
- $6^3 = 216$
- $7^3 = 343$
- $8^3 = 512$
- $9^3 = 729$
- $10^3 = 1000$

# INDEX LAWS

- Multiplying the same base, indices are added.
  - $2^3 \times 2^5 = 2^8$
  - $x^5 \times x^7 = x^{12}$
  - $2y^3 \times 6y^4 = 12y^7$
- Dividing the same base, indices are subtracted.
  - $8^9 \div 8^3 = 8^6$
  - $x^{11} \div x^3 = x^8$
- Raising the same base, indices are multiplied.
  - $(5^2)^4 = 5^8$
  - $(y^5)^{-2} = y^{-10}$
  - $(2x^4)^3 = 8x^{12}$

# INDICES

## EVALUATING

ZERO  
 $x^0 = 1$

Anything to the power of zero is 1.

- $5^0 = 1$
- $12^0 = 1$

ONE  
 $x^1 = x$

Anything to the power of one is 0.

- $9^1 = 9$
- $16^1 = 16$

POSITIVE  
 $x^2 = x \times x$

An indice tells how many times you multiply the number by itself

- $4^3 = 4 \times 4 \times 4 = 64$
- $2^5 = 2 \times 2 \times 2 \times 2 \times 2 = 32$

NEGATIVE  
 $x^{-3} = \frac{1}{x^3}$

Negative indice must be written as a fraction

- $5^{-3} = \frac{1}{5^3} = \frac{1}{125}$
- $6^{-2} = \frac{1}{6^2} = \frac{1}{36}$

FRACTIONAL  
 $x^{\frac{2}{3}} = (\sqrt[3]{x})^2$

Fractional is 2 parts Denominator = root Numerator = indice

- $8^{\frac{2}{3}} = (\sqrt[3]{8})^2 = 2^2 = 4$
- $16^{\frac{3}{2}} = (\sqrt{16})^3 = 4^3 = 64$