Powers: Expressions used to show repeated multiplication

ex. power 4^3 ← Exponent Number of times the base is multiplied.

↑ Base (Factor) what is being multiplied

$4 \times 4 \times 4 = 4^3 = 64$

repeated multiplication | power | standard form

ex. A square has an area of $49\ cm^2$ What are the dimensions?

Area = length x width

$49\ cm^2 = 7\ cm \times 7\ cm$

Area = $7^2\ cm^2$

49 is a PERFECT SQUARE: Product of a natural number multiplied by itself. (7×7)

Name Perfect Squares to 169

$1 \times 1 = 1^2 = 1$
$2 \times 2 = 2^2 = 4$
$3 \times 3 = 3^2 = 9$
$4 \times 4 = 4^2 = 16$
$5 \times 5 = 5^2 = 25$
$6 \times 6 = 6^2 = 36$
$7 \times 7 = 7^2 = 49$
$8 \times 8 = 8^2 = 64$
$9 \times 9 = 9^2 = 81$
$10 \times 10 = 10^2 = 100$
$11 \times 11 = 11^2 = 121$
$12 \times 12 = 12^2 = 144$
$13 \times 13 = 13^2 = 169$

Perfect Cubes to 216

$1 \times 1 \times 1 = 1^3 = 1$
$2 \times 2 \times 2 = 2^3 = 8$
$3 \times 3 \times 3 = 3^3 = 27$
$4 \times 4 \times 4 = 4^3 = 64$
$5 \times 5 \times 5 = 5^3 = 125$
$6 \times 6 \times 6 = 6^3 = 216$

Recognize these!

ex. A cube has a volume of $125\ cm^3$. What are the dimensions?

Volume = length x width x height

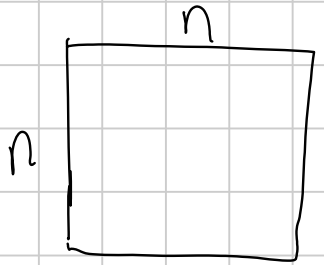
$125\ cm^3 = 5cm \times 5cm \times 5cm$

Perfect Squares can be modelled as the area of a square.

Area = side x side

$n^2 = n \times n$

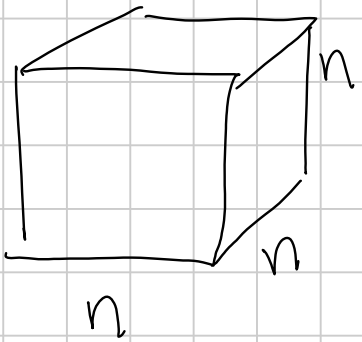
n^2 ← number



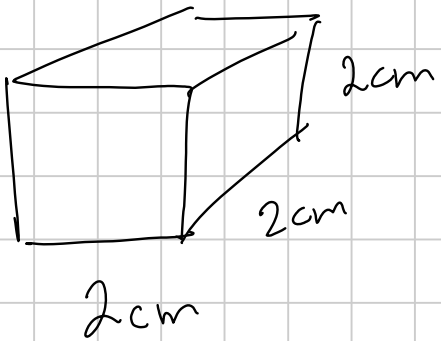
Perfect Cubes can be modelled as the Volume of a cube

Volume = side x side x side

$n^3 = n \times n \times n$



Surface Area = Total area of all faces of a 3D shape



Find the surface area

Area = length x width

$2^2_{cm^2} = 2cm \times 2cm$

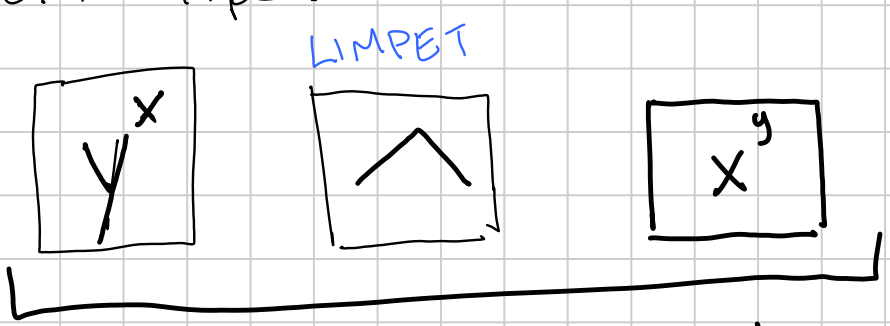
$= 4cm^2$

Total

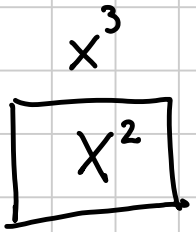
$6 \times 4cm^2 = 24cm^2$

$6 \times 2^2 = 24cm^2$

Calculator Tips:



Work for any exponent



Short cut for finding squares.

(Exponent = 2)

$3^2 \rightarrow$ 3 [x^y] 2 = 9

Base — exponent key — Exponent

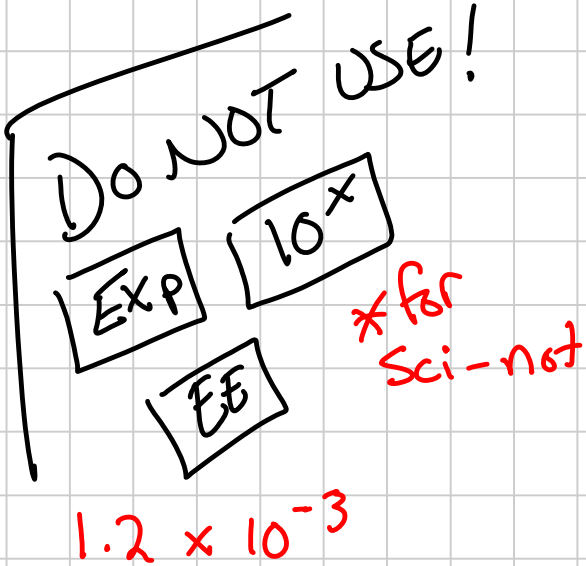
3 [x^2] = 9

2^5 → 2 [y^x] 5 = 32

[$\wedge$]

[xy]

[x^n]



Assignment → Text pg 52

1-3, 6, 7, 9, 11, 18, 20