Maths Knowledge Organiser
YEAR 9 HIGHER – UNITS 3 to 5

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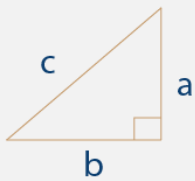
Key Language

1	**Evaluate**	Find the value of
2	**Powers**	Indices, indicates number of times a number is multiplied by itself
3	**Roots**	Inverse of powers
4	**Reciprocal**	The reciprocal of a number is 1 divided by the number
5	**Perpendicular**	Meeting at a right angle
6	**Perpendicular bisector**	A line that cuts another line in half at an angle of 90°
7	**Angle bisector**	A line that cuts an angle in half
8	**Locus (Loci)**	A set of points that share a property (like distance from somewhere)
9	**Equidistant**	Equal distance from two or more points
10	**Construct**	Use compass and ruler to draw accurately
11	**Pythagoras' Theorem**	$a^2 + b^2 = c^2$, or the relationship between sides in a right angle triangle
12	**Hypotenuse**	Longest side of a triangle
13	**Plan**	A birds-eye view
14	**Elevation(s)**	View from the front or side of an object
15	**Prism**	A 3D shape with two identical ends and flat sides (a constant cross section that is a polygon)
16	**Volume**	The amount 3D space an object takes up
17	**Capacity**	The amount that something can hold
18	**In terms of π**	Leave π in your answer

Formulae to Learn

Pythagoras Theorem:

$a^2 + b^2 = c^2$



$a = \sqrt{c^2 - b^2}$

$b = \sqrt{c^2 - a^2}$

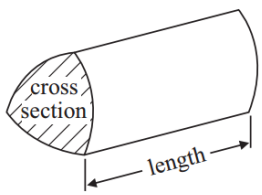
$c = \sqrt{a^2 + b^2}$

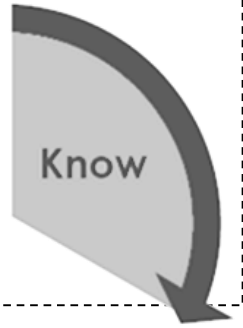
Laws of indices

$a^{-m} = \frac{1}{a^m}$ $\quad a^{\frac{n}{m}} = (\sqrt[m]{a})^n$

$a^{\frac{1}{m}} = \sqrt[m]{a}$ $\quad a^0 = 1$

Volume of prism = area of cross section × length





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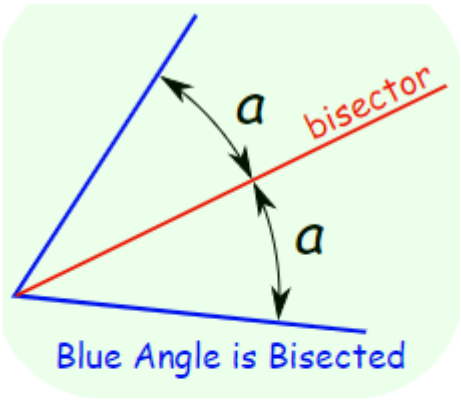
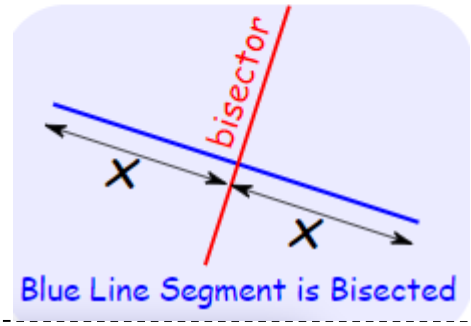
More to Learn

$1\ m^3$	$= 1000\ L$
$1\ L$	$= 1000\ mL$
$1\ mL$	$= 1\ cm^3$

Notes Section:





ORDER OF OPERATIONS

G	GROUPING SYMBOLS () {} []
E	EXPONENTS 3^2 x^2 10^5
M	MULTIPLICATION OR DIVISION GO FROM LEFT TO RIGHT
S	SUBTRACTION OR ADDITION GO FROM LEFT TO RIGHT

Know

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PRACTICE QUESTIONS

1. What does evaluate mean?
2. What word describes the 3 in 6^3?
3. What is the inverse of 'power'?
4. How do you find the reciprocal of a number?
5. What is the reciprocal of 8?
6. What is the reciprocal of ¾?
7. What word means 'meet at a right angle'?
8. What word means 'to split in half'?
9. What does an angle bisector do?
10. What do we call the points a set distance from another point?
11. What word describes being the same distance from two or more points?]
12. What equipment is used for constructions?
13. State Pythagoras' Theorem.
14. What do we call the longest side of a triangle?
15. What is a birds-eye view called?
16. What do we call the view from the front or side?
17. What are the properties of a prism?
18. Is a cuboid a prism?
19. Is a cylinder a prism?
20. Why is a cylinder not a prism?
21. What is capacity?
22. How many ml are equivalent to $1cm^3$?
23. What is $1000cm^3$ equivalent to?
24. What is the volume of a cylinder with radius of 5cm and height of 10cm? give your answer in terms of pi.

ANSWERS

1. Calculate the value
2. Index or power
3. Roots
4. 1 divided by the number
5. 1/8
6. 4/3
7. Perpendicular
8. Bisect
9. Split an angle in half
10. Loci (Locus)
11. Equidistant
12. Ruler and compass
13. $a^2 + b^2 = c^2$
14. Hypotenuse
15. Plan
16. Elevation
17. 3D, flat, two end faces the same
18. Yes
19. No
20. Curved surface
21. How much an object can hold
22. 1
23. 1 litre
24. $250\pi cm^3$

Do