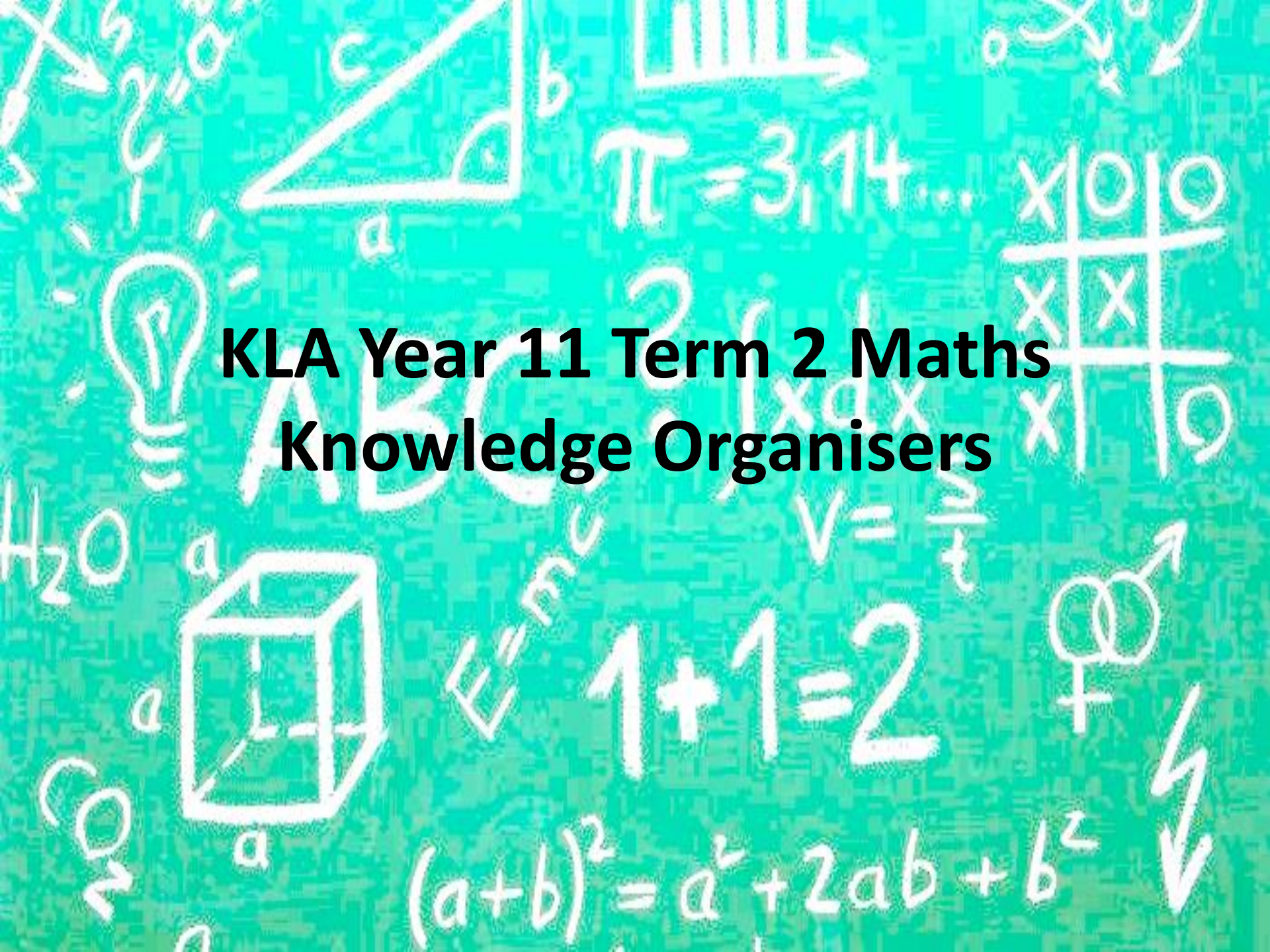


KLA Year 11 Term 2 Maths Knowledge Organisers



Year 11 – Foundation & Higher Knowledge Organiser Mock Revision

$$a^m \times a^n = a^{m+n}$$

$$a^m \div a^n = a^{m-n}$$

$$(a^m)^n = a^{m \times n}$$

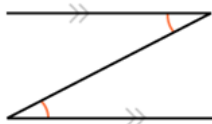
Inequalities

(Crocodile eats the bigger meal)

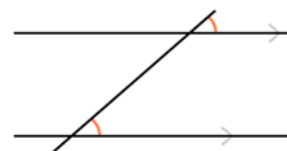
\leq bigger meal

Bigger meal \geq

Alternate Angles



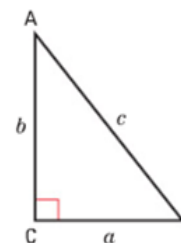
Corresponding Angles



Pythagoras Theorem

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

Remember to square root the answer!



$$a^{\frac{1}{n}} = \sqrt[n]{a}$$

$$a^0 = 1$$

$$a^{-n} = \frac{1}{a^n}$$

- $y \propto x$ is the **statement of proportionality**.
- $y = kx$ is the formula, where k is the constant of proportionality.

To calculate compound interest, find the multiplier:

- Amount after n years = original amount \times multiplier ^{n}

Expanding Bracket – Face, Grid, FOIL

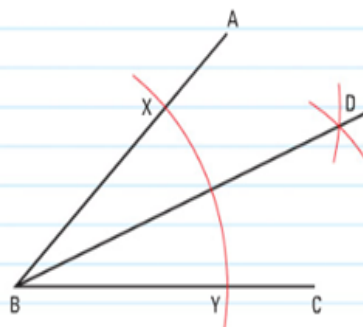
$$(x + 7)(x - 2)$$

'Cherry Pies Delicious, Apple Pies R 2'

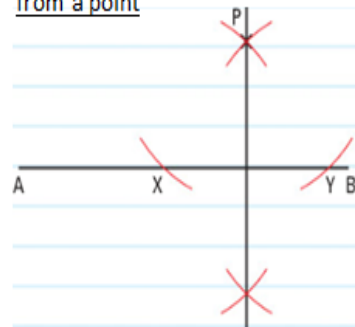
$$C = \pi \times d$$

$$A = \pi r^2$$

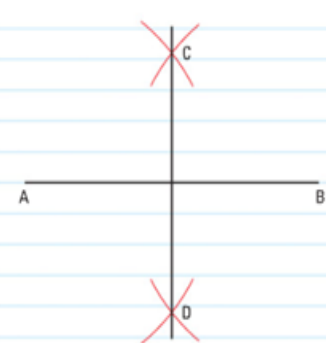
Construction – Angle Bisector



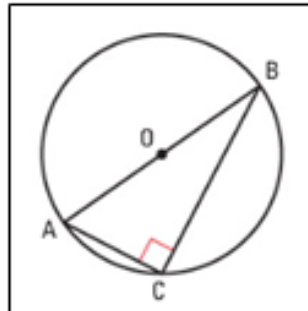
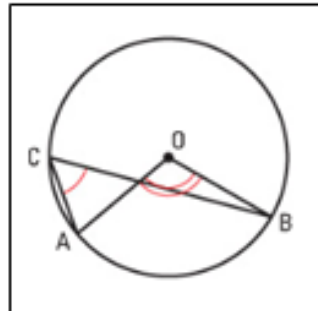
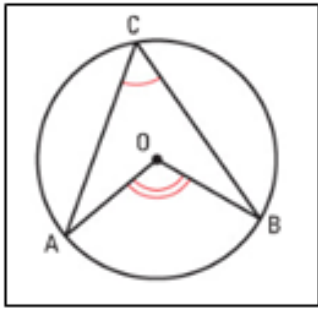
Construction – Perpendicular line from a point



Construction - Perpendicular Bisector



Year 11 – Foundation & Higher Knowledge Organiser Mock Revision

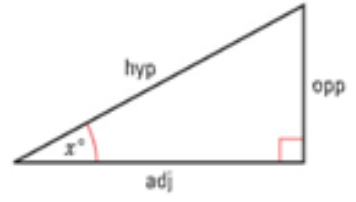


SOHCAHTOA might help you remember these results.
 Sin Opp Hyp Cos Adj Hyp Tan Opp Adj

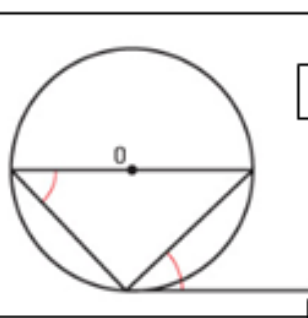
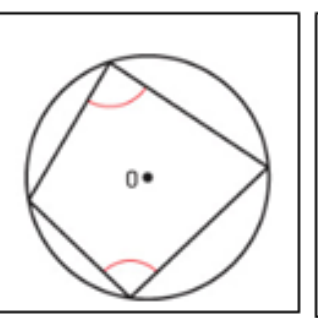
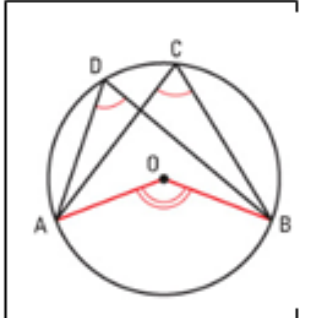
$$\sin x^\circ = \frac{\text{opp}}{\text{hyp}}$$

$$\cos x^\circ = \frac{\text{adj}}{\text{hyp}}$$

$$\tan x^\circ = \frac{\text{opp}}{\text{adj}}$$



LEARN!
KM to Miles
 8k m = 5 miles
 1km = 5/8 miles



'Drink Some Tea'



$$D = S \times T$$

$$S = \frac{D}{T}$$

$$T = \frac{D}{S}$$

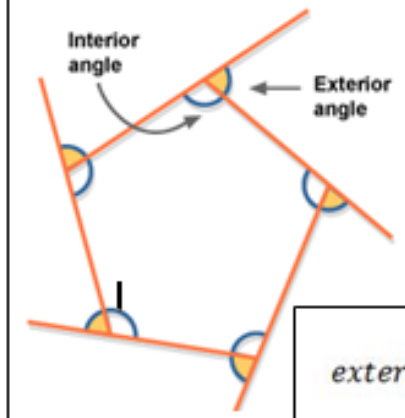
frequency density = $\frac{\text{frequency}}{\text{class width}}$

$$\text{Estimated mean} = \frac{\sum f \times x}{\sum f}$$

FREQUENCY DENSITY

Time taken (t seconds)	Frequency	Class width	Frequency density $\frac{\text{frequency}}{\text{class width}}$
10 < t < 30	5	20	$\frac{5}{20} = 0.25$
30 < t < 35	4	5	$\frac{4}{5} = 0.8$
35 < t < 40	8	5	$\frac{8}{5} = 1.6$
40 < t < 50	27	10	$\frac{27}{10} = 2.7$
50 < t < 70	34	20	$\frac{34}{20} = 1.7$

Plot the Class width and the FD as bars!



$$\text{exterior angle} = \frac{360}{n}$$

See a table in the exam?, its either...

1. Mean from a table
2. Cumulative frequency...
3. Histogram

CUMULATIVE FREQUENCY

Time (t minutes)	Frequency	Cumulative frequency
t < 60	0	0
60 < t < 65	2	0 + 2 = 2
65 < t < 70	12	2 + 12 = 14
70 < t < 75	21	14 + 21 = 35
75 < t < 80	5	35 + 5 = 40

Plot the points in brackets, should be a stretched 'S' shape.

MEAN FROM A TABLE

Number of calls	Frequency (f)	Class midpoint (x)	f x x
3-5	2	4	8
6-8	3	7	21
9-11	5	10	50
12-14	7	13	91
15-17	4	16	64
Totals	21		234

No plotting needed!

Expectation = n x p (number in sample x probability)

Year 11 – Higher Knowledge Organiser Mock Revision

Remember **Completing the square!**

Expressions like $ax^2 + bx + c$ are rewritten as $a\left(x^2 + \frac{b}{a}x\right) + c$

Probability

Where $P(A)$ is the probability of outcome A and $P(B)$ is the probability of outcome B :

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

$$P(A \text{ and } B) = P(A \text{ given } B) P(B)$$

Perimeter, area, surface area and volume formulae

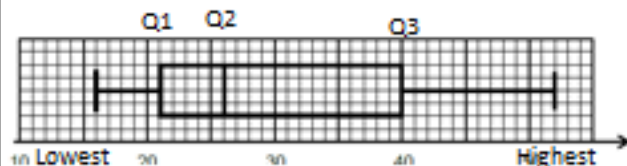


Where a and b are the lengths of the parallel sides and h is their perpendicular separation:

$$\text{Area of a trapezium} = \frac{1}{2}(a + b)h$$

Volume of a prism = area of cross section \times length

Box Plots



Learn the quadratic formula!

- You can use the formula $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ to solve quadratic equations.

RATIO – Add the ratio, divide the total to find ONE PART.

Order of the ratio is how you write it!



Non RIGHT angle
Trigonometry

Sine Rule – Pairs of information

[pair – pear – apple – eve – sin – Sine Rule]

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

Cosine Rule – No pairs of information

Finding an angle

$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

Finding a side

$$a^2 = b^2 + c^2 - 2bc \cos A$$

Area of a triangle formula:

$$\frac{1}{2}ab \sin C$$

Vectors – Move from a to b along lines/sides you know!

- Magnitude
- Direction

Knowledge Questions

Below are a series of questions.

Use these to apply your knowledge and practice.

Revision Topic - 1 _____

Revision Topic - 2 _____

Revision Topic - 3 _____

Revision Topic - 4 _____

Revision Topic - 5 _____

Revision Topic - 6 _____

Knowledge Checklist

KNOWLEDGE
PROGRESS

KNOWLEDGE CHECKLIST		R	A	G
1	Revision Topic - 1 _____			
2	Revision Topic - 2 _____			
3	Revision Topic - 3 _____			
4	Revision Topic - 4 _____			
5	Revision Topic - 5 _____			
6	Revision Topic - 6 _____			
7				
8				
9				
10				

High Flyers - Enrichment Task

Esther earns £28 000 a year.

She pays 20% tax on earnings over £12 500

She pays 12% National Insurance on earnings over £8632

Work out Esther's monthly take-home salary.

Maths Knowledge Questions

Below are a series of questions.

Use these to apply your knowledge and practice.

Revision Topic - 1 _____

Revision Topic - 2 _____

Revision Topic - 3 _____

Revision Topic - 4 _____

Revision Topic - 5 _____

Revision Topic - 6 _____

Maths Knowledge Checklist

KNOWLEDGE
PROGRESS

KNOWLEDGE CHECKLIST		R	A	G
1	Revision Topic - 1 _____			
2	Revision Topic - 2 _____			
3	Revision Topic - 3 _____			
4	Revision Topic - 4 _____			
5	Revision Topic - 5 _____			
6	Revision Topic - 6 _____			
7				
8				
9				
10				

High Flyers - Enrichment Task



A circular clock face has centre O.
The long hand is OA and 6 cm in length.
The short hand is OB and 4 cm in length.
The time is 4 o'clock.
Find the distance from A to B.

