Year 11 Higher Scheme of Learning

MODULE 2

Bishop Chadwick
Catholic Education Trust

Bespoke revision

Functions & transforming graphs

Vector notation

Circle theorems, equations & graphs

Complex trigonometry

Statistics

Year 11

Construction & loci

Proportion & graphs

Functions & further algebra

Similarity & congruence

Perimeter, area & volume

Averages

Angles & Transformations

Construction s & bearings

Probability & diagrams

Graphs

Year 10

Fractions & percentages

Sequences

Pythagoras & Trigonometry

Equations, quadratics & Inequalities

Proportion & compound measures

Data handling

Handling data & measures of location

Angles in parallel lines, lines & polygons

Fractions & percentages

Algebra: including substituting & brackets

Year 9

Sequences & Indices

Number; including index laws

Area of trapezia & circles; Line symmetry & reflections

Standard form & number sense

Sets & probability

Proof

Multiplicative reasoning

Working in Cartesian plane

Brackets, equations & inequalities

Ratio & proportion

Year 8

Fraction arithmetic

Geometric reasoning

Prime numbers

Ratio & scale

Multiplying & dividing fractions

Representing data, tables & probability

Operations with equations & directed numbers

Fraction & % of amounts

Fractions, decimals & percentages

Use and understand algebraic notation

Place value and ordering, including decimals

Year 7

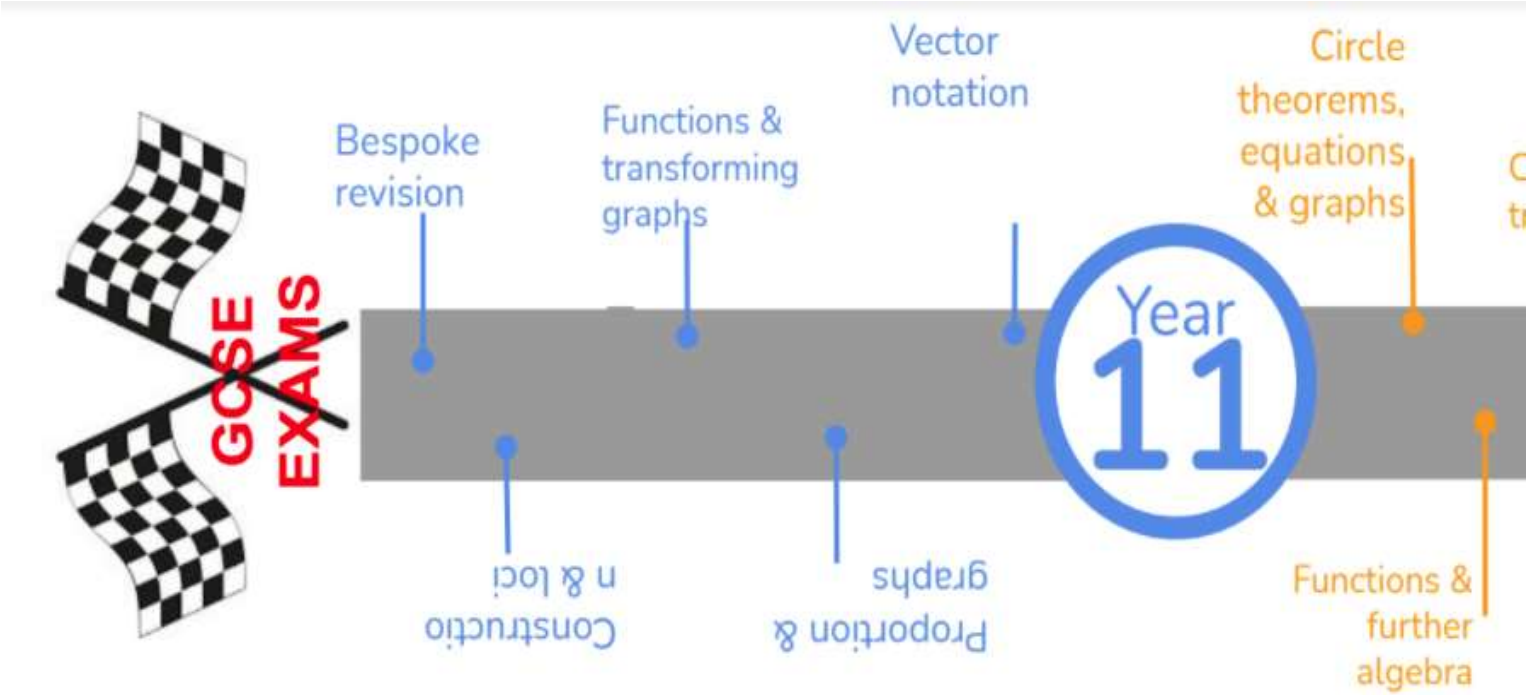
Problem solving with four main operations

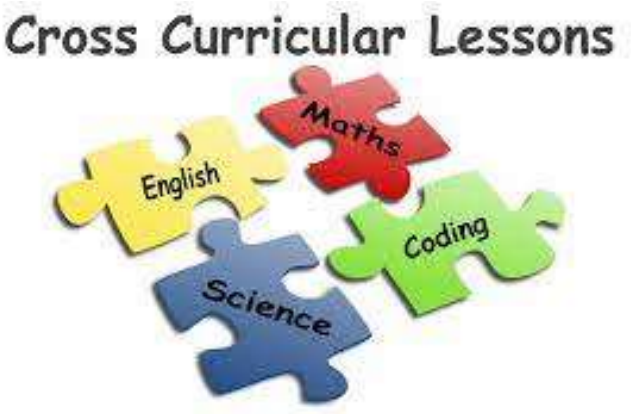
Equality & Equivalence - solving equations

Sequences

Extend/Higher 2021/22
(includes Y11 bounce back)

This is what your child will be taught as part of the GCSE higher course in Year 11 in their MATHS lessons.

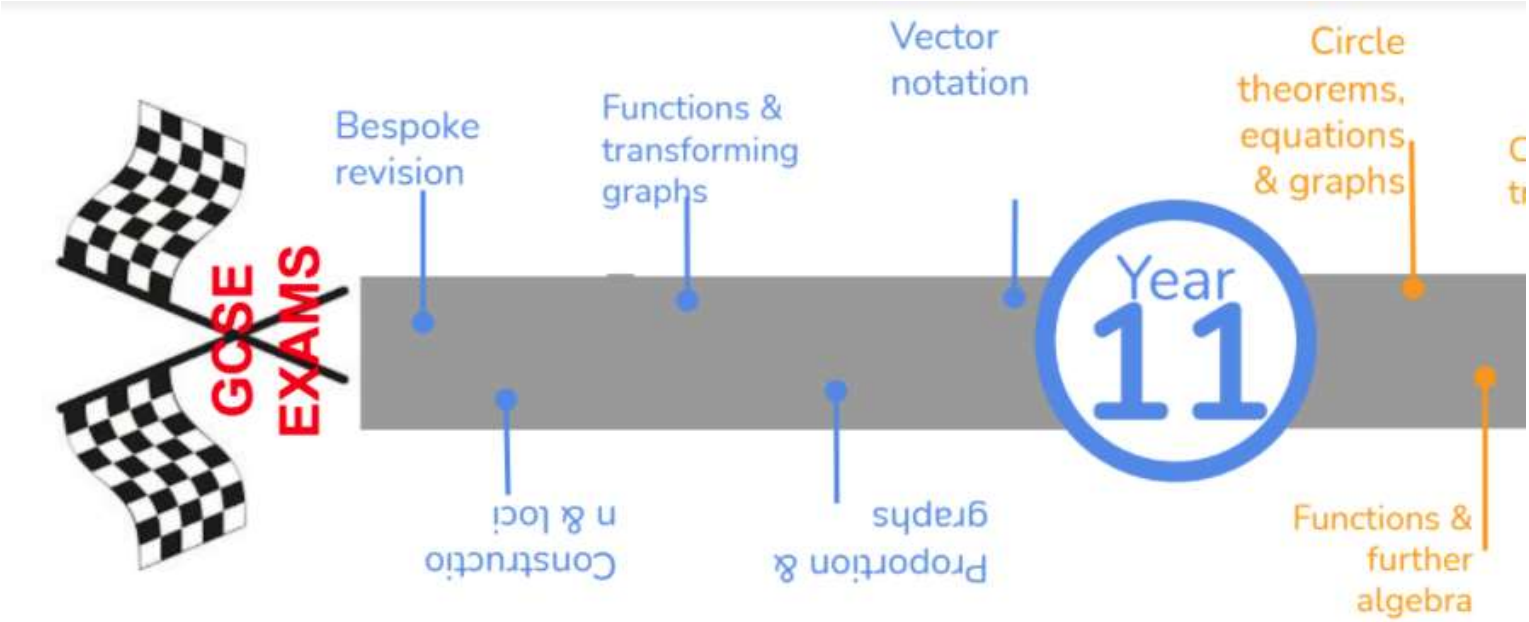




They will have also have specific lessons linked to other subjects and a diet of retrieval built into their lessons.

In Year 11 Module 2 your child will study:

- Vectors
- Proportion and graphs
- Constructions and loci



The Year 11 scheme of learning includes elements of our 'bounce back' scheme, which takes into account the periods of lockdown.

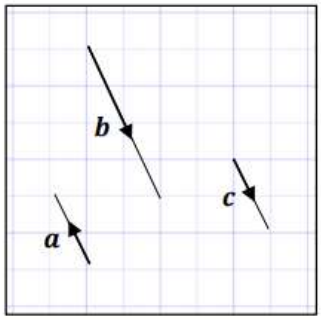
Vectors

In this Unit students will study:

- Vector notation
- Vector arithmetic
- Vector proof

Vectors multiplied by a scalar

Parallel vectors are scalar multiples of each other



$b = 2 \times c = 2c$

Multiply c by 2 this becomes b. The two lines are parallel

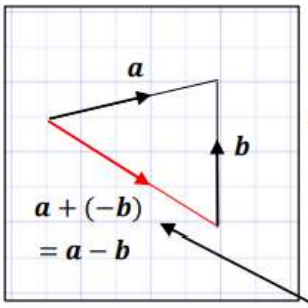
$a = -1 \times c = -c$

The vectors a and c are also parallel. A negative scalar causes the vector to reverse direction

$b = -2 \times a = -2a$

$a = \begin{pmatrix} -1 \\ 2 \end{pmatrix}$ $b = \begin{pmatrix} 2 \\ -4 \end{pmatrix}$ $c = \begin{pmatrix} 1 \\ -2 \end{pmatrix}$

Addition and subtraction of vectors



$a = \begin{pmatrix} 5 \\ 1 \end{pmatrix}$ $b = \begin{pmatrix} 0 \\ 4 \end{pmatrix}$

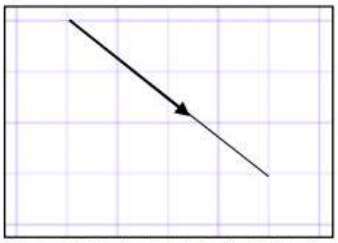
$a + (-b) = \begin{pmatrix} 5 + & -0 \\ 1 + & -4 \end{pmatrix} = \begin{pmatrix} 5 \\ -4 \end{pmatrix}$

The resultant is $a - b$ because the vector is in the opposite direction to b which needs a scalar of -1

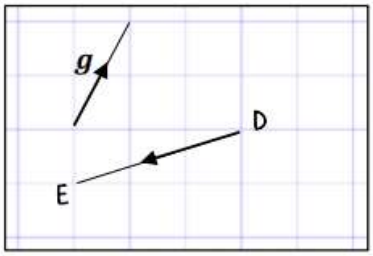
Understand and represent vectors

Column vectors have been seen in translations to describe the movement of one image onto another

Movement along the x-axis → $\begin{pmatrix} 4 \\ -3 \end{pmatrix}$ ← Movement along the y-axis



Understand and represent vectors



Vector notation $\overrightarrow{DE}$ is another way to represent the vector joining the point D to the point E

$\overrightarrow{DE} = \begin{pmatrix} -3 \\ -1 \end{pmatrix}$

The arrow also indicates the direction from point D to point E

Vectors can also be written in bold lower case so g represents the vector $g = \begin{pmatrix} 1 \\ 2 \end{pmatrix}$

Keywords

Direction: the line our course something is going
Magnitude: the magnitude of a vector is its length
Scalar: a single number used to represent the multiplier when working with vectors
Column vector: a matrix of one column describing the movement from a point
Resultant: the vector that is the sum of two or more other vectors
Parallel: straight lines that never meet

In the algebra unit your child will study:

- Solving problems with direct and inverse proportion using algebra
- Proportionality graphs
- Exponential graphs
- Velocity-Time graphs
- Transforming graphs

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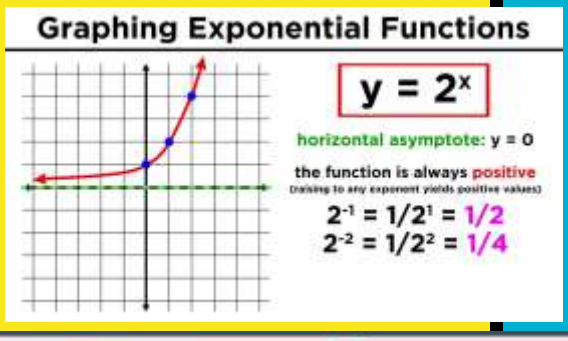
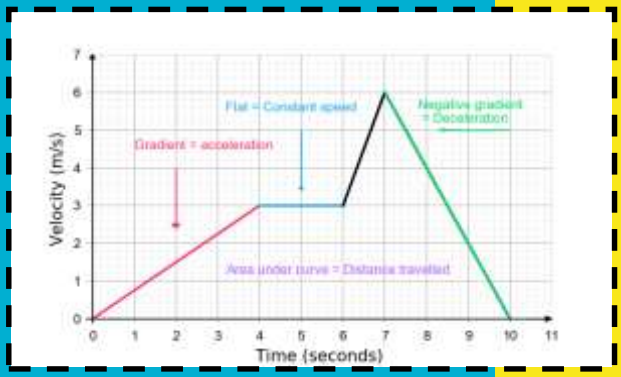
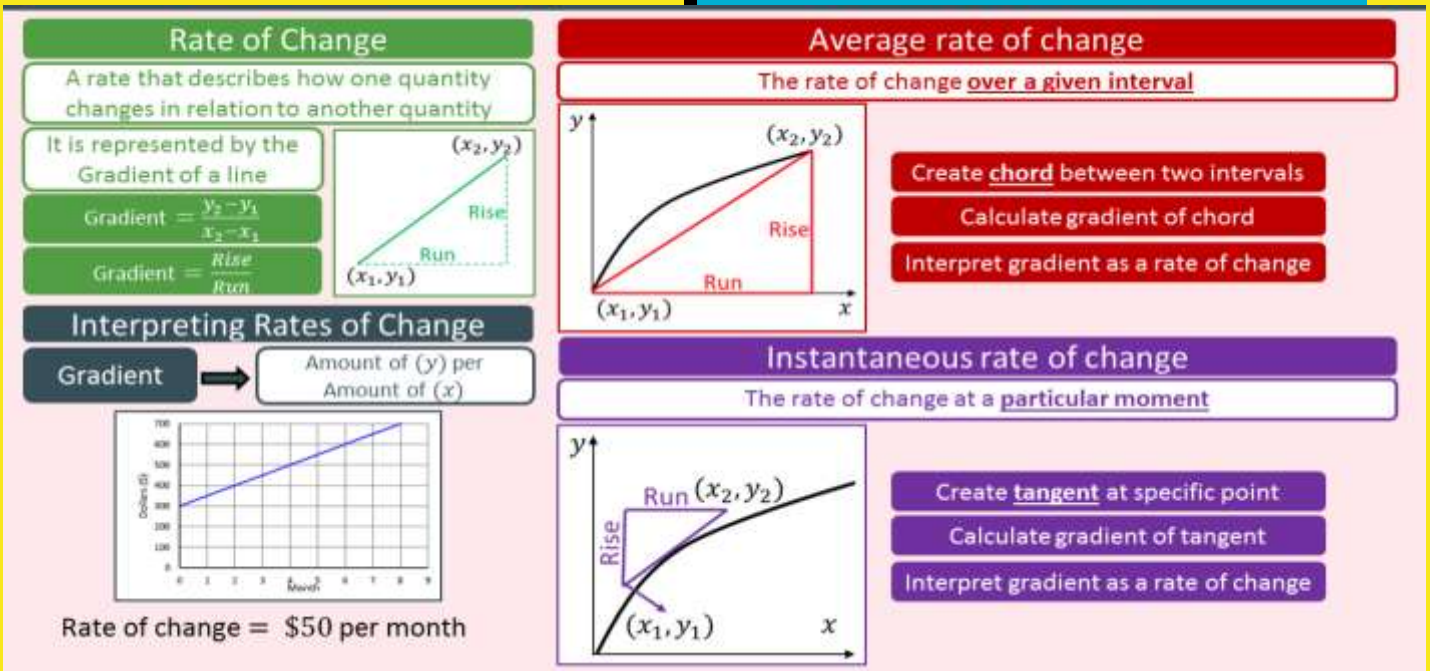
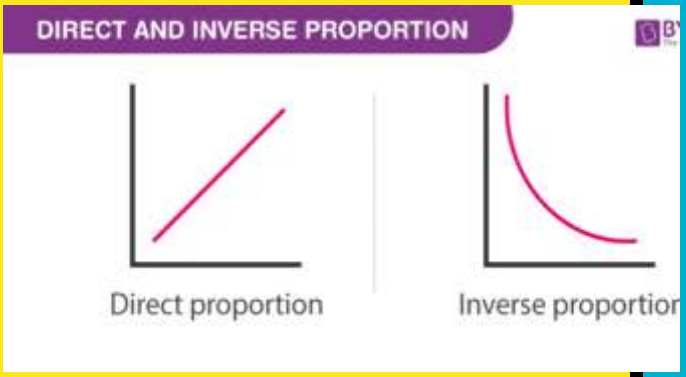
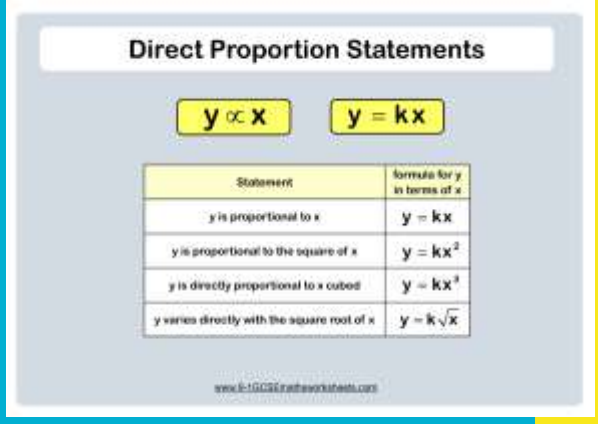
Proportion and Graphs









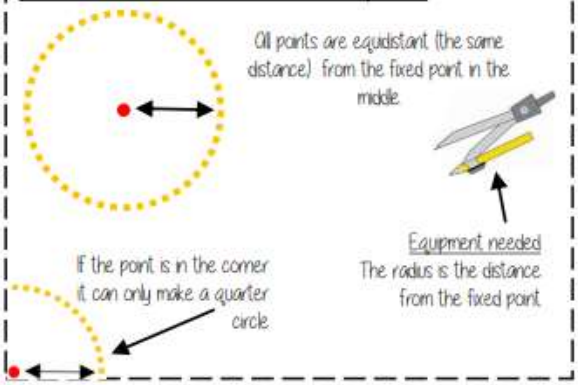


Constructions and Loci

In this Unit students will study:

- Constructing triangles and bisectors
- Loci
- Bearings and scale drawing

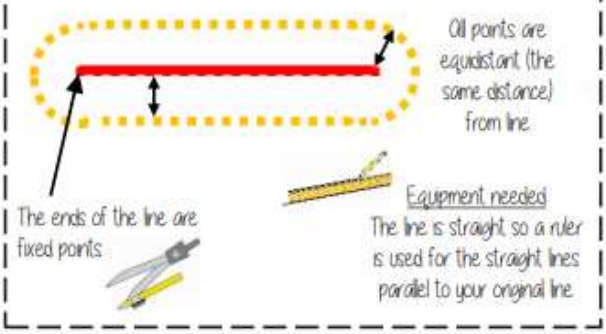
Locus of a distance from a point



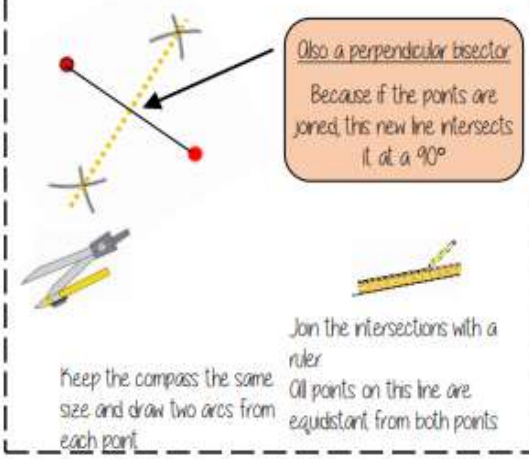
Keywords

Protractor: piece of equipment used to measure and draw angles
Locus: set of points with a common property
Equidistant: the same distance
Discorectangle: (a stadium) – a rectangle with semi circles at either end
Perpendicular: lines that meet at 90°
Arc: part of a curve
Bisector: a line that divides something into two equal parts
Congruent: the same shape and size

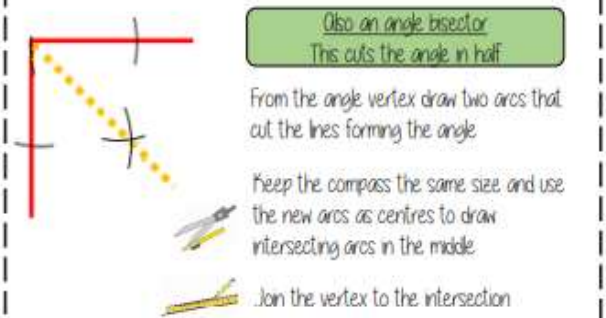
Locus of a distance from a straight line



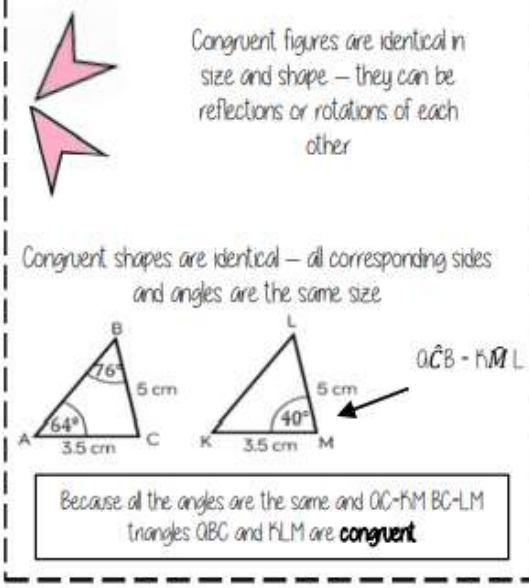
Locus equidistant from two points



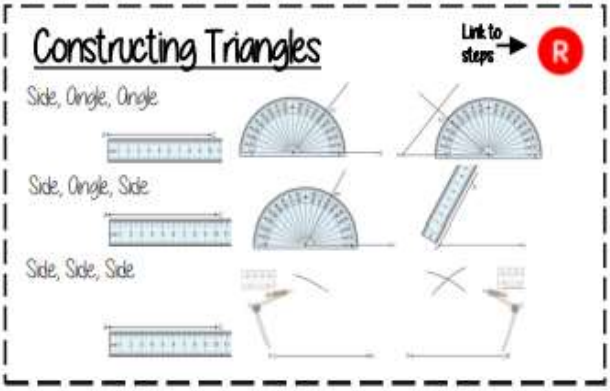
Locus of a distance from two lines



Congruent figures

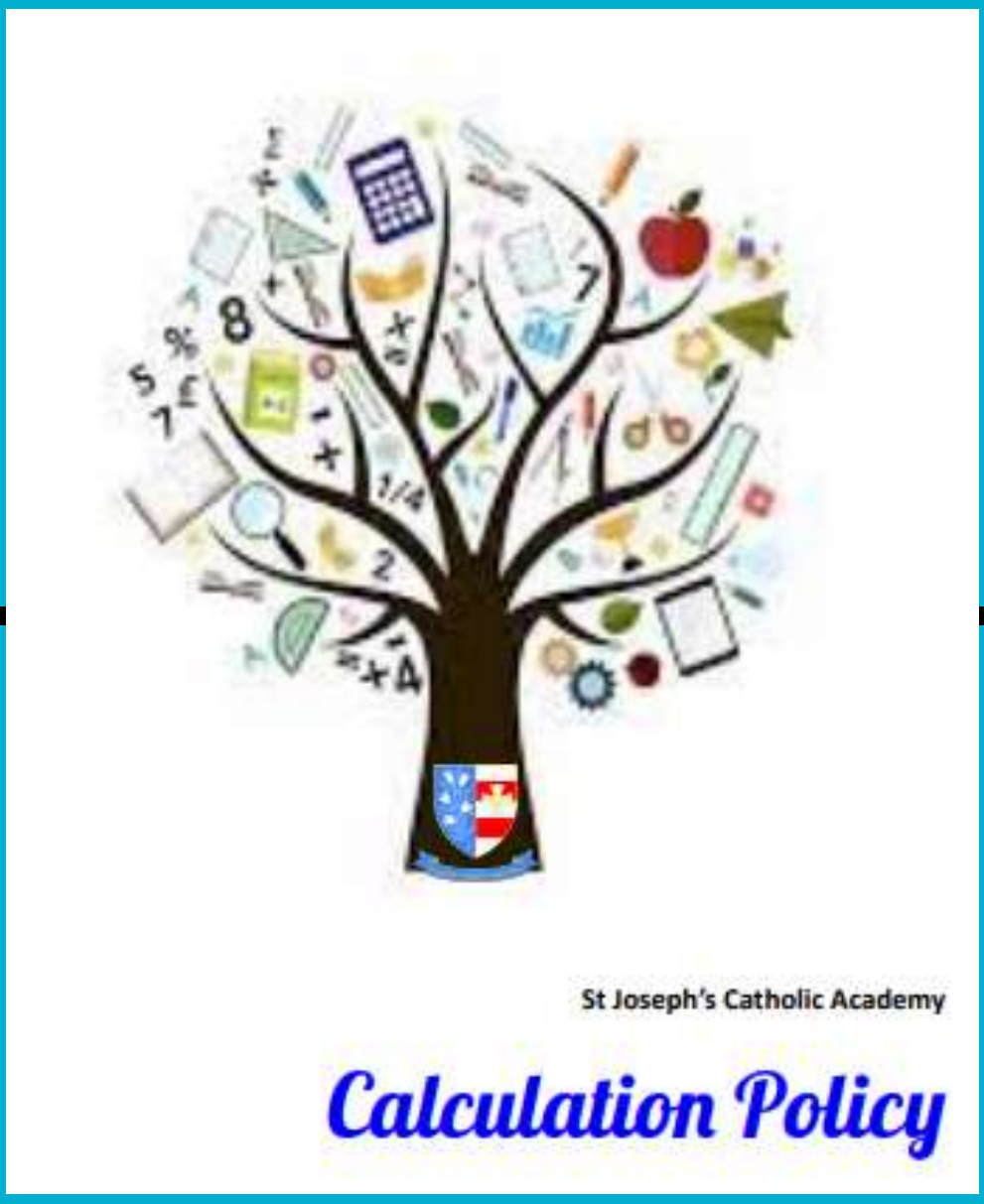


Constructing Triangles

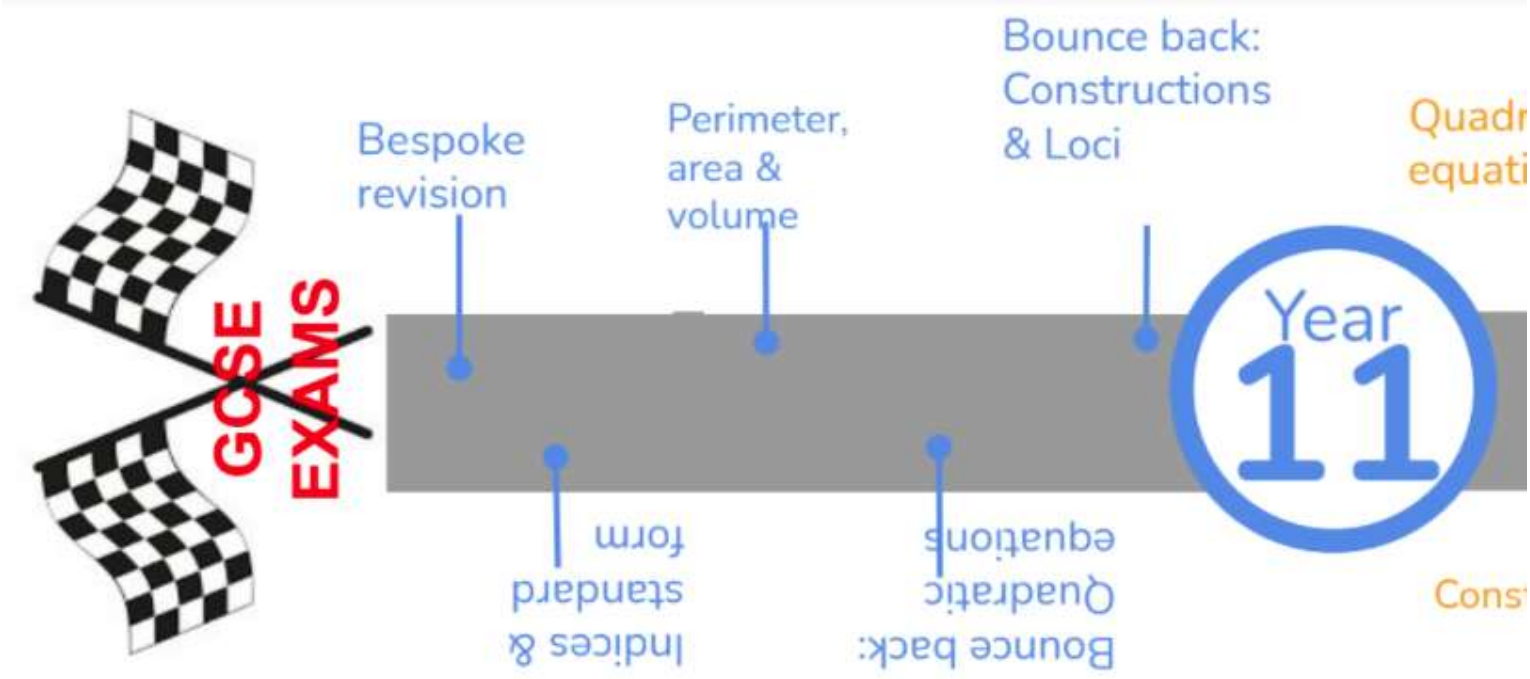


We recommend pupils have a Casio scientific calculator.
The Casio calculator featured is the one we use when demonstrating in lessons.

On our school website there is a calculation policy showing the methods we use for common operations. It can be found at: Our School > Policies



Moving into Module 3



The Year 11 scheme of learning includes bespoke revision in order to prepare our students for their external examinations.

Module 2 ends our delivery of new content.

Module 3 concentrates on revision centred around the needs of your child.