

KS4 Curriculum Map	Subject	Mathematics (Foundation) (Higher) in addition to the Foundation content
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Year 10 Autumn	Year 10 Spring	Year 10 Summer
<p>Half term 1 Number properties: Factors, multiples, primes, HCF, LCM and indices. Place value: multiplying with powers of ten, standard form, rounding and dividing decimals. Equivalent Fractions: comparing, adding, subtracting, multiplying, dividing, using mixed numbers Percentages: increases and decreases, interest, reverse percentage and applying percentages. Main home learning tasks: There will be one homework per week. Sometimes this will be written and be a check on either the skills from the week or mixed questions. Sometimes this will be set as assignments online e.g Hegarty Maths. Key assessment: Pupils will be practicing GCSE questions in lessons and will be tested on their understanding of each topic throughout the term. They will be have a formal assessment before the end of the term.</p> <p>Half Term 2 Ratio: Convert between units, real life scales, share in a ratio, best value, bar modelling and problem solving. Algebra: simplifying, expanding single and double brackets, substitution, identities and factorising. Balance method: Solving equations including; fractional, algebra on both sides, brackets and inequalities.</p>	<p>Half Term 3 Dimensions: including perimeter, area, volume, plans, nets and elevations and surface area and Pythagoras. 360 degrees: Angle properties (right angles, straight lines, full turn) Parallel lines, bearings and angles in polygons. Properties of shapes: Recap shape properties e.g symmetry, rotational. Parallel and perpendicular properties and Vectors. Main home learning tasks: There will be one homework per week. Sometimes this will be written and be a check on either the skills from the week or mixed questions. Sometimes this will be set as assignments online e.g Hegarty Maths Key assessment: Pupils will be practicing GCSE questions in lessons and will be tested on their understanding of each topic throughout the term. They will be have a formal assessment before the end of the term.</p> <p>Half Term 4 Probability: Using Fraction decimal and percentage to represent probabilities. Listing outcomes, Sample space diagrams, relative frequency , Venn diagrams, frequency trees, and tree diagrams. Sequences: spotting patterns in number, naming and generating sequences (nth term). Recognise square, cube, Fibonacci and quadratic sequences.</p>	<p>Half Term 5 Compound Measures: time, distance, speed, density, rates of pay and conversion graphs. Data: averages, scatter graphs, two way tables, pie charts and estimating mean from grouped data Main home learning tasks: There will be one homework per week. Sometimes this will be written and be a check on either the skills from the week or mixed questions. Sometimes this will be set as assignments online e.g Hegarty Maths Key assessment: Pupils will be practicing GCSE questions in lessons and will be tested on their understanding of each topic throughout the term. They will be have a formal assessment before the end of the term.</p> <p>Half Term 6 Loci and constructions- Draw a range of locus for given rules. Be able to construct; triangles, angle bisectors and line bisectors. Transformations: Rotations, reflections, translations, enlargements and combinations.</p>

<p>Main home learning tasks: There will be one homework per week. Sometimes this will be written and be a check on either the skills from the week or mixed questions. Sometimes this will be set as assignments online e.g Hegarty Maths</p> <p>Key assessment: One exam during term 1. Pupils will have access to a topic list on Class Charts. A mathswatch assignment is created to support pupils with revision.</p> <p>Assessment conditions: In class in exam conditions.</p>	<p>Graph: Plotting a variety of graphs (straight line, quadratic, cubic) Understanding the equation of a straight line ($y=mx+c$) and simultaneous equations graphically.</p> <p>Main home learning tasks: There will be one homework per week. Sometimes this will be written and be a check on either the skills from the week or mixed questions. Sometimes this will be set as assignments online e.g Hegarty Maths</p> <p>Key assessment: One exam during term 2. Pupils will have access to a topic list on Class Charts. A mathswatch assignment is created to support pupils with revision.</p> <p>Assessment conditions: In class in exam conditions.</p>	<p>Revision: Time will be given to revise topics covered throughout the year in preparation for the final assessment including GCSE style questions.</p> <p>Main home learning tasks: There will be one homework per week. Sometimes this will be written and be a check on either the skills from the week or mixed questions. Sometimes this will be set as assignments online e.g Hegarty Maths</p> <p>Key assessment: Two exams during term 2. Pupils will have access to topic lists on Class Charts. Mathswatch assignments are created to support pupils with revision.</p> <p>Assessment conditions: In the hall in exam conditions.</p>
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Year 11 Autumn	Year 11 Spring	Year 11 Summer
<p>Half term 1</p> <p>Extend knowledge of number work to surds, law of indices, standard form and limits of accuracy. In addition to the above higher tier will cover; Rationalising surds, fractional and negative indices, and 4 operations with algebraic fractions including simplification.</p> <p>Extend percentages work to reverse percentages and percentage change. Students will become confident in real life context questions with percentages including simple interest, compound interest and growth and decay.</p> <p>Extend work on ratio to include linear functions, direct and inverse proportion. In addition to the above higher tier will cover; Relationship between variables algebraically and graphically.</p> <p>Main home learning tasks: There will be one homework per week. This will be either using Hegarty Maths where students will be required to revisit topics previously taught to consolidate knowledge or written work to consolidate learning. Revision homework for upcoming assessments will be set. Post assessment: students will be expected to address areas for development using the Assessment Cycle (Completion of PLCs, YouTube Videos and Improvement tasks.)</p> <p>Key assessment: Students will complete GCSE questions as part of their regular classroom practice. Students will complete topic tests within lessons to check for understanding. Students will have their PPE exam later this Term, where they will complete 2 exam papers.</p> <p>Assessment conditions: In class in exam conditions. PPEs will take place in the hall, in exam conditions.</p>	<p>Half Term 3</p> <p>Extend work on angles, solving problems using trigonometry. (higher tier will use the Sine and Cosine Rules for calculating angles and lengths in non-right angles triangles. Be able to apply the $\frac{1}{2} ab\sin C$ for area of a triangle.)</p> <p>Students will extend their knowledge of shape, learning about the addition and subtraction of vectors and the multiplication of vectors by a scalar. Students will be able to apply this to a diagram. (higher tier will construct geometric arguments and proofs using vectors).</p> <p>Extend work on probability to include relative frequency, use relative frequency and theoretical probability to predict future events of an experiment. Represent probabilities on tree diagrams. Calculate probabilities of independent and dependant combined events. Link work on probability to Venn diagrams.</p> <p>Main home learning tasks: There will be one homework per week. This will be using Hegarty Maths where students will be required to revisit topics previously taught to consolidate knowledge. Revision homework for upcoming assessment. Post assessment: students will be expected to address areas for development using the Assessment Cycle (Completion of PLCs YouTube Videos and Improvement tasks.)</p> <p>Key assessment: Students will have a half termly GCSE</p>	<p>Half Term 5</p> <p>Develop and extend work with compound measures. Understand how speed, distance and time; mass, volume and density; pressure, force and area are related. Be able to plot and interpret graphs of distance and time and apply compound measures to real life context graphs and conversion graphs. (Higher tier will extend their work on real life contexts by working with speed-time graphs, the area under a graph and estimating gradients at a point on a curve and estimating areas under a curve.)</p> <p>Develop and extend work in statistics. When looking at scatter graphs, extend work on correlation to understand that correlation does not imply causation. Interpolate and extrapolate trends and understand the limitations of doing so. Deduce properties of populations and distributions. Understand the limitations of sampling. Be able to describe a population using statistics. (Higher tier will extend work on constructing and interpreting cumulative frequency graphs and histograms.)</p> <p>Be able to interpret, analyse and compare data sets which include discrete, continuous and grouped data. Use appropriate measures to do this including mode and for higher tier quartile and inter quartile range. Extend work on loci and constructions, being able to make accurate drawings of triangles and other 2D shapes using a ruler and a protractor.</p>

Half Term 2

Developing knowledge of **algebra** further to include quadratic expressions, functions and identities. Extend knowledge of solving to quadratic equations.

In addition to the above, higher tier will cover; Functions, composite functions, inverse functions and the multiplication of two or more binomial expressions.

Extend work on area and circumference of circle to calculating arc lengths and area of sectors. (higher tier including finding the angle of a sector and area of a segment).

Use and apply concepts of congruency and similarity, including the relationships between lengths. (higher tier will look at the effect of enlargements on area and volume in similar shapes).

Extend work on **shape** to calculate areas and volumes of spheres, pyramids cones and composite solids.

Higher tier will be able to apply and prove the standard circle theorems, being able to calculate angles and lengths.

Main home learning tasks:

There will be one homework per week. This will be either using Hegarty Maths where students will be required to revisit topics previously taught to consolidate knowledge or written work to consolidate learning. Revision homework for upcoming assessments will be set. Post assessment: students will be expected to address areas for development using the Assessment Cycle (Completion of PLCs, YouTube Videos and Improvement tasks.)

Key assessment:

Students will complete GCSE questions as part of their regular classroom practice. Students will complete topic tests within lessons to check for understanding.

Half Term 4

Use and apply work on Pythagoras' Theorem and trigonometry to find angles and lengths in right angle triangles in 2D and 3D shapes.

Extend work on **sequences** to be able to generate and use the nth term for linear and quadratic sequences.

Recognise square, cube, geometric, Fibonacci and quadratic sequences. (higher tier will look at sequences involving surds).

Extend work on **graphs**, being able to plot and recognise straight line, quadratic and cubic graphs. Understanding the equations of these lines and how to use them to solve simultaneous equations and find key points on a graph. Work with reciprocal graphs and graphs of growth and decay. (higher tier will also know that the gradient of perpendicular lines are the negative reciprocal of each other and be able to work out the equations of parallel and perpendicular lines. Higher tier will also work with regions bound by inequalities and understand how completing the square relates to turning points of quadratic graphs.)

Main home learning tasks:

There will be one homework per week. This will be either using Hegarty Maths where students will be required to revisit topics previously taught to consolidate knowledge or written work to consolidate learning. Revision homework for upcoming assessments will be set. Post assessment: students will be expected to address areas for development using the Assessment Cycle (Completion of PLCs, YouTube Videos and Improvement tasks.)

Key assessment:

Use a straight edge and a pair of compasses to do standard **constructions**, such as triangles, perpendicular bisectors of a given line, angle bisectors and angles of 60 degrees. Construct regions bound between various constructions and construct **loci** of points and lines.

Describe regions satisfying several conditions.

Extend work on **dimensions** to include fractional scale factors for enlargement of shape (including negative scale factors for higher tier).

Describe combinations of **transformations**. (Including invariance for higher tier. Understand 2D vectors and use 2D vectors to describe translations.

Main home learning tasks:

There will be one homework per week. This will be either using Hegarty Maths where students will be required to revisit topics previously taught to consolidate knowledge or written work to consolidate learning. Revision homework for upcoming assessments will be set. Post assessment: students will be expected to address areas for development using the Assessment Cycle (Completion of PLCs, YouTube Videos and Improvement tasks.)

<p>Students will have their PPE exam during this half-term, where they will complete 2 exam papers.</p> <p>Assessment conditions: In class in exam conditions. PPEs will take place in the hall, in exam conditions.</p>	<p>Students will complete GCSE questions as part of their regular classroom practice. Students will complete topic tests within lessons to check for understanding. Students will have their final PPE exam during this half-term, where they will complete 3 exam papers.</p> <p>Assessment conditions: In class in exam conditions. PPEs will take place in the hall, in exam conditions.</p>	
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For a full look at the AQA GCSE Mathematics specification and to see what is covered in each topic area, please refer to the AQA website or follow this link:

<https://www.aqa.org.uk/subjects/mathematics/gcse/mathematics-8300/specification-at-a-glance>