

Year 11 Mathematics

In Year 11 students complete the OCR GCSE course during the first two terms, with the remaining curriculum time used to review and consolidate their learning. Lessons develop students' mathematical knowledge across the five strands - number, algebra, ratio and proportion, geometry and statistics, as well as build their confidence in problem solving.

Methods of deepening and securing knowledge:

Interleaving	Low stakes starters are used to develop and consolidate learning from Year 10.
Challenge and differentiation	In all lessons, teachers use a 'Going for Gold' strategy to differentiate the work. Planning considers students' starting points and look at possible misconceptions.
Questioning	Teachers give students thinking time when posing questions. Questioning is used to develop thinking/reasoning skills, as well as to identify misconceptions. Variety of retrieval techniques used including cold-calling.
Modelling	Key techniques are modelled clearly with worked examples and explanations of both procedures and principles.

	Autumn term 1	Autumn term 2	Spring term 1
Topic(s)	<p>Higher Level</p> <ul style="list-style-type: none"> • Circle theorems - students learn the eight circle theorems and how to use them along with previously learnt angle facts to calculate unknown angles. Theorems also used to prove facts. • Probability - students build on Key Stage 3 knowledge of probability to calculate the probability of single and combined events using a variety of strategies, including probability trees and Venn diagrams, including conditional probability. • Sequences - students generate and describe with algebra both linear and 	<p>Higher Level</p> <ul style="list-style-type: none"> • Straight line graphs - students consolidate their knowledge from Year 10 - drawing graphs from equations, finding equations of a graph, calculating gradients, investigating parallel and perpendicular lines. • Real life graphs - knowledge of previous topics applied to real life situations, for example, currency conversion graphs, speed/distance/time graphs. • Non linear graphs - drawing quadratic, cubic and reciprocal graphs, finding equations of these graphs, using these graphs to solve equations. 	<p>Higher Level</p> <ul style="list-style-type: none"> • Transformations - students build on Key Stage 3 knowledge of transformation - translation/reflection/rotation and enlargement. They will describe and carry out these transformations, including combinations, investigate/prove congruent and similar shapes. • Similar figures - using enlargement from the previous topic and prior knowledge of ratio, students will investigate and use the relationship between similar shapes - length/area/volume.

	<p>quadratic sequences.</p> <p>Foundation Level</p> <ul style="list-style-type: none"> ● Geometric review - students build on Key Stage 3 knowledge of angle facts - parallel lines/interior angles/exterior angles, to calculate unknown angles. Also consolidate prior knowledge of perimeter/area/volume. ● Probability - students build on Key Stage 3 knowledge of probability to calculate the probability of single and combined events, using a variety of strategies including probability trees and Venn diagrams, including conditional probability. 	<p>Foundation Level</p> <ul style="list-style-type: none"> ● Sequences - students generate and describe, in words and algebra, linear sequences, investigating patterns and if terms are in a sequence. ● Graphs - students consolidate their knowledge from Year 10, drawing graphs from equations, finding equations of a graph, calculating gradients, investigating parallel lines. This is then applied to real life situations, for example, currency conversion graphs, speed/distance/time graphs. 	<ul style="list-style-type: none"> ● Graph transformations - using knowledge of graphs and transformations, students will investigate connections between graphs. Can they describe the transformation from one graph to another? Can they write the equation given the transformation? <p>Foundation Level</p> <ul style="list-style-type: none"> ● Transformations - students build on Key Stage 3 knowledge of transformation - translation/reflection/rotation and enlargement. They will describe and carry out these transformations, investigate congruent and similar shapes. ● Similar Figures - using enlargement from the previous topic and prior knowledge of ratio, students will investigate and use the relationship between similar shapes.
<p>Assessment</p>	<p>Higher Level Circle theorems. Sequences.</p> <p>Foundation Level Geometry. Probability.</p>	<p>Higher Level Mock exam 1 (previous summer exam). Graphs.</p> <p>Foundation Level Mock exam 1 (previous summer exam). Sequences.</p>	<p>Higher Level Mock exam 2 (previous November exam). Transformations.</p> <p>Foundation Level Mock exam 2 (previous November exam). Transformations.</p>
<p>CEIAG <i>(Careers that are linked to that topic)</i></p>	<p>Sequences - coding/security. Probability - insurance.</p>		<p>Transformations - designer (textiles/patterns).</p>

	Spring term 2	Summer term 1	Summer term 2
Topic(s)	<p>Higher Level</p> <ul style="list-style-type: none"> • Functions - building on autumn term graph topics. Finding inputs/outputs, identifying turning points and lines of symmetry. Applying this knowledge to exponential graphs. • Vectors - adding/subtracting/multiplying column vectors. Draw a vector. Use vectors in geometrical reasoning. <p>Foundation Level</p> <ul style="list-style-type: none"> • Functions - building on autumn term graph topics. Drawing simple quadratic and cubic graphs. Finding inputs/outputs, identifying turning points and lines of symmetry. Applying this knowledge to reciprocal graphs. • Vectors - adding/subtracting/multiplying column vectors. Draw a vector. 	<p>Higher Level</p> <ul style="list-style-type: none"> • Revision - programmes of revision for individual classes are set up and shared with students. Plans are based on mock exam analysis and student needs. Each week half an exam paper is sat under exam conditions, marked and fed back to students. <p>Foundation Level</p> <ul style="list-style-type: none"> • Revision - programmes of revision for individual classes are set up and shared with students. Plans are based on mock exam analysis and student needs. Each week half an exam paper is sat under exam conditions, marked and fed back to students. 	
Assessment	<p>Higher Level Practice Papers Foundation Level Practice Papers</p>	<p>Higher Level Practice Papers Foundation Level Practice papers</p>	
CEIAG <i>(Careers that are linked to that topic)</i>			

Independent Study

As a department, independent study is set weekly via Hegarty Maths. Two tasks are set per week based on the prior half term's work (to promote interleaving and retention), students get a week to complete. Hegarty Maths provides videos to support students and parents in their quiz, which is then marked straightaway. Staff review work submitted by students and provide feedback as necessary. In Year 11 we also ask students to complete two MEMRi tasks per week on Hegarty Maths to support them in their own revision. MEMRi reviews students' prior learning and sets tasks on areas of weakness to close gaps and promote student progress.