MATHEMATICS CURRICULUM PLAN

SUBJECT:	**Maths**	**YEAR GROUP:**	**10 (Foundation Tier)**
COURSE:	**GCSE Mathematics**	**EXAM BOARD:**	**Edexcel**
SUBJECT INTENT:	In Year 10, students are given the opportunity to develop their understanding of the interconnected nature of maths and apply knowledge acquired at Key Stage 3 in more complex and sophisticated ways. Students will continue to experience problems that go beyond routine and repetition so they will be required to think about what skills or concepts need to be applied in different contexts. Our aim in Year 10 is to help students become more confident and resilient problem solvers by encouraging them to try out different methods and make mistakes to see what works and what doesn't. Students will also be formally introduced to GCSE exam style questions and will have the opportunity to develop their exam techniques. We explore common errors and misconceptions, layout and workings, command words, checking answers, and mastering using a calculator.		

Term	Topic	Core learning	Sequencing	Specification link
Autumn Term 1 ***7 Weeks (28 hrs)***	Indices and roots ***3 weeks (12 hrs)***	Students will 1. use positive integer, powers and associated roots (square, cube and higher) 2. recognise powers of 2, 3, 4, 5 3. use index laws. 4. calculate values using negative indices. 5. calculate with roots.	***Building on…*** Year 8 powers and roots and year 9 square cubes, roots and powers units. ***Building towards…*** These skills will be used in numerous topics throughout Year 10 and 11 including, Pythagoras and quadratics.	**N6, N7, A4**
	Pythagoras and Trigonometry ***3 weeks (12 hrs)***	Students will 1. recall formulae for Pythagoras and trigonometric relationships and apply them to find angles and lengths in right-angled triangles in two-dimensional figures. 2. Solve problems with right- angled Triangles without a calculator using exact values.	***Building on…*** An introduction to Pythagoras' Theorem in Year 9 ***Building towards…*** Being able to solve GCSE problems involving finding angles and lengths in right-angled triangled.	
	Consolidation / Assessment and feedback ***1 week (4 hours)***			

Term	Topic	Core Learning	Sequencing	Specification
Autumn 2 ***8 weeks (32 hours)***	Algebraic manipulation ***3 weeks (12 hrs)*** Solving linear equations ***2 weeks (8 hrs)*** Simultaneous equations ***1 week (4 hours)***	Students will 1. simplify and manipulate algebraic expressions: a. collecting like terms b. multiplying out single and double brackets c. taking out common factors to factorise linear expressions d. factorising quadratic expressions of the form $x^2 + bx + c$, including the difference of square. 2. solve linear equations with one unknown algebraically. 3. solve linear equations with an unknown on both sides algebraically. 4. solve two simultaneous equations with two variables.	***Building on…*** Expanding, factorising, substitution, simplifying and solving linear equations were covered throughout Key Stage 3. Other topics covered in Key Stage 3 such as angles, area, perimeter … ***Building towards…*** This unit will build towards students solving more complex problems involving algebraic notation including sequences, graphs, quadratic equations, simultaneous equations and inequalities.	**A4, A17, A18, A19**
	Consolidation / Assessment and feedback ***1 week (4 hrs)*** End of Autum term Assessment ***1 week (4 hrs)***			

Term	Topic	Core learning	Sequencing	Specification link
Spring Term 1 ***6 Weeks***	Coordinates and linear graphs ***3 weeks (12 hrs)***	Students will 1. work with coordinates in all four quadrants 2. plot graphs of equations that correspond to straight-line graphs. 3. use the form y = mx + c to identify parallel lines 4. find the equation of the line through two given points or through one point with a given gradient.	***Building on…*** Students were introduced to linear graphs for the first time in Year 9. Students created tables of values, drew graphs, and worked with y = mx+ c. ***Building towards…*** Students will further develop their knowledge to answer complex Key Stage 4 exam style questions that require strong knowledge of linear functions .	***A8, A9, A10, A12, R14***
	Ratio ***2 weeks (8 hrs)***	Students will 1. use ratio notation, including reduction to simplest form. 2. divide a given quantity into two parts! 3. use ratio to solve geometric, statistical, and number problems. 4. use ratio to solve problems that involve algebraic manipulation.	***Building on…*** This unit builds on an introduction to proportion and ratio in year 8 and developing their ideas in year 9. ***Building towards…*** Ratio problems appear in numerous other topics throughout year 10 and 11.	***R5, R6, R7, R8***
	Consolidation / Assessment and feedback ***1 week (4 hrs)***			

Term	Topic	Core learning	Sequencing	Specification link
SPRING 2 ***5 weeks***	Inequality ***2 weeks (8 hrs)***	Students will 1. order positive and negative integers, decimals and fractions; use the symbols =, ≠, ≤, ≥ 2. Solve linear and quadratic inequalities and use appropriate notation including representing on a number line.	***Building on…*** Students will build on their knowledge of place value and number lines as well as their equation-solving skills introduced in year 8 and developed in year 9 and earlier in Year 10. ***Building towards…*** This unit will provide students with skills needed to develop their understanding of number and answer Key Stage 4 exam questions that involve inequalities.	**N1, A22**
	Circle ***2 weeks (8 hrs)***	Students will 1. identify and apply circle definitions and properties, including: centre, radius, chord, diameter, circumference, tangent, arc, sector and segment 2. know the formulae: circumference of a circle = $2\pi r = \pi d$, area of a circle = πr^2 3. calculate perimeter and area of 2D shapes, including circles and composite shapes 4. Calculate arc lengths and sector area of circles	***Building on…*** In Year 9 the majority of students will have been introduced to some of the complex properties of a circle; the area and circumference as well as fractions of circles i.e. half, quarter etc. ***Building towards…*** This unit provide students with the skills to answer complex Key Stage 4 exam questions that involve area, perimeter and parts of circles.	***G9, G17, G18***
	Transformation ***1 weeks (4 hrs)***	Students will identify, describe and construct congruent and similar shapes, including on coordinate axes, by considering rotation, reflection, translation and enlargement (including fractional scale factors)	***Building on…*** *Year 9 unit on polygons and transformations* ***Building towards…*** This unit provide students with the skills to answer complex Key Stage 4 exam questions that involve congruent, similar and transformations of shapes.	**G7**
	Consolidation / Assessment and feedback			

Term	Topic	Core learning	Sequencing	Specification link
Summer Term 1 ***6 Weeks***	Averages ***2 weeks (8 hrs)***	Students will 1. work with qualitative, discrete, continuous, grouped, ungrouped, primary and secondary data 2. interpret, analyse and compare the distributions of data sets using averages (median, mean, mode) and spread (range) from a list of data 3. know what an outlier is 4. recognise the advantages and disadvantages of each type of average. 5. use frequency tables to find the mean mode and median of grouped data. Estimate the mean from a frequency table	***Building on…*** In year 8, students were introduced to the data handling cycle and averages and developed in year 9. ***Building towards…*** This unit will cover concepts that students will need to apply to fully understand how to compare data, using a range of strategies.	***S4***
	Area and Volume ***3 weeks (12 hrs)***	Students will 1. know and apply formulae to calculate: a. area of triangles, parallelograms, trapezium, b. surface area of prisms c. volume of cuboids and other regular prisms (including cylinders) d. perimeters of 2D shapes	***Building on…*** In Year 8 students worked with the area and volume of regular polygons, cubes and cuboids, this included surface area. In year 9 students developed this by introducing circles and cylinders ***Building towards…*** This unit will deepen students' understanding of volume and surface area in order to solve complex exam style questions.	**G16, G17**
	Consolidation / Assessment and feedback ***1 week (4 Hrs)***			

Term	Topic	Core learning	Sequencing	Specification link
Summer Term 2 ***7 weeks***	Compound measures and rounding ***2 weeks (8 Hrs)***	Students will 1. round numbers and measures to an appropriate degree of accuracy 2. use inequality notation to specify simple error intervals due to truncation or rounding. 3. Work with compound measures including unit conversions. 4. Plot and interpret distance-time graphs	***Building on…*** Students will have been introduced to compound measures in maths and science at Key Stage 3 and studied a unit on accuracy and measures in Year 9. ***Building towards…*** This unit supports learning in science as well as supporting students in solving GCSE maths questions in numerous topics.	***R1, R11, A14, N15, N16***
	Probability and systematic listing ***2 weeks (8 Hrs)***	Students will 1. Compare theoretical probabilities with relative frequencies. 2. Complete and use a frequency tree. 3. Know when to add or multiply probabilities. 4. Complete and use a tree diagram and Venn diagram to calculate probabilities of independent and dependent events 5. Apply systematic listing	***Building on…*** This unit builds on several Key Stage 3 probability units where students studied the concepts of fairness, probabilities, and expectation. Students were introduced to venn diagrams in Year 8 and tree diagrams in Year 9. ***Building towards…*** This unit will build towards students answering complex Key Stage 4 exam style questions that involve probability.	***P1, P2, P3, P4, P5, N5***
	Similarity and Congruence ***2 weeks (8 Hrs)***	Students will 1. Identify congruent shapes and understand the conditions for congruent triangles. 2. Understand similarity to make geometric inferences and identify similar shapes. 3. Compare lengths of similar shapes	***Building on…*** In Year 9 students learnt to identify scale factors and working out missing lengths in similar shapes. This unit also builds on previous units on ratio and enlargements. ***Building towards…*** This unit will provide students with essential skills needed to access Key Stage 4 exam style questions.	***R9, R16, R16h***
	Consolidation / Assessment and feedback Year 10 Mocks (Paper 1 and Paper 2)			

	1 week (4 Hrs)