

Year 10 MATHS Curriculum Map 2022-23

Term	Topic/Unit title	Essential knowledge and skills (what students should know, understand and be able to do by the end of the unit/topic) Note: ** signifies higher tier only.
Autumn 1	Fractions, Decimals & Percentages. Formulae & Functions. Assessment on Chapters 1-6.	<ul style="list-style-type: none"> • Fractions: <ul style="list-style-type: none"> ○ Identify, compare and simplify fractions. ○ Convert between mixed numbers and improper fractions. ○ Calculate equivalent fractions. ○ Add, subtract, multiply and divide fractions including mixed numbers. ○ Calculate percentages of an amount. ○ Convert between fraction, decimal and percentages. Convert recurring decimals into fractions** • Formulae: <ul style="list-style-type: none"> ○ Substitute values into a formula. ○ Rearrange formulae. • Quadratic expressions: <ul style="list-style-type: none"> ○ Expand pairs of binomials. ○ Expand multiple brackets**. ○ Factorise quadratic expressions. • Functions: <ul style="list-style-type: none"> ○ Understand and use function notation. ○ Substitute values into functions and composite functions. ○ Manipulate composite functions. ○ Find inverse functions.

<p>Autumn 2</p>	<p>Working in 2D. Probability. Equations.</p>	<ul style="list-style-type: none"> • Working in 2D: <ul style="list-style-type: none"> ○ Use and draw scale diagrams. ○ Know the 8 cardinal bearings and use 3 figure bearings. ○ Calculate the area of common shapes including rectangles, triangles, trapezia and parallelograms. Use correct units of area. ○ Work with the four transformations; rotations; reflections; translations and enlargements. Work with combinations** of transformations and negative scale factors**. • Probability: <ul style="list-style-type: none"> ○ Calculate theoretical probabilities for single events. ○ Understand the probability scale and the language of probability. ○ Use relative frequency to generate experimental probabilities. • Equations: <ul style="list-style-type: none"> ○ Solve linear equations. ○ Higher tier students solve quadratics by factorising, completing the square** and with the quadratic formula**. ○ Foundation tier students understand the notation of inequalities and solve linear inequalities.
<p>Spring 1</p>	<p>Measures & Accuracy. Equations & Inequalities Circles</p>	<ul style="list-style-type: none"> • Measures & Accuracy: <ul style="list-style-type: none"> ○ Round to a given place value or number of significant figures. ○ Estimate the answers to calculations by rounding. ○ Give error intervals and calculate the bounds of calculations**. • Equations: <ul style="list-style-type: none"> ○ Solve simultaneous equations by substitution and elimination. Higher tier students solve quadratic/linear** simultaneous equations. ○ Foundation tier students solve quadratics by factorising.

		<ul style="list-style-type: none"> ○ Use iterative techniques to solve equations**. ● Circles: <ul style="list-style-type: none"> ○ Know the terminology associated with circles. ○ Know the formulae for calculating the area or circumference of a circle. ○ Calculate the area or circumference of a circle.
Spring 2	Circles & Constructions Ratio & Proportion	<ul style="list-style-type: none"> ● Circles: <ul style="list-style-type: none"> ○ Calculate the area or perimeter of sectors ○ Know and apply the eight circle theorems**. ● Constructions: <ul style="list-style-type: none"> ○ Construct perpendicular bisectors, perpendicular at a point, angle bisectors and angles of sixty degrees. ○ Use constructions in solving loci problems. ● Ratio & Proportion: <ul style="list-style-type: none"> ○ Simplify ratios and share in a given ratio. ○ Relate ratios to proportions and linear equations. ○ Use proportional reasoning to solve problems. ○ Calculate percentage change.
Summer 1	Factors, Powers & Roots. Year 10 Exams Graph work.	<ul style="list-style-type: none"> ● Number: <ul style="list-style-type: none"> ○ Find factors, multiples, highest common factors, lowest common multiples and the prime factor decomposition of a number. ○ Simplify surds, rationalise the denominator and calculate in exact terms**. ● Graph work: <ul style="list-style-type: none"> ○ Calculate the gradient of a line segment. ○ Use the gradient and y-intercept to find the equation of a straight line.

		<ul style="list-style-type: none"> ○ Interpret distance-time graphs.
Summer 2	<p>Graph Work Continued (Higher Tier Students)</p> <p>3D Shapes (Foundation Tier Students)</p> <p>Year Review</p>	<ul style="list-style-type: none"> ● Higher tier students continue their graph work: <ul style="list-style-type: none"> ○ Relate inequalities to regions on a graph**. ○ Sketch/plot quadratics identifying turning points and roots**. ○ Solve quadratic inequalities using a sketch graph to identify the region/s**. ○ Interpret kinematic graphs**. ● Foundation tier students work on 3D shapes: <ul style="list-style-type: none"> ○ Name and describe the properties of objects. ○ Make isometric drawings and accurate elevations/plan views. ○ Calculate the volume/surface area of common 3D shapes. Use formulae for more complicated 3D shapes.

Year 11 MATHS Curriculum Map 2022-23

Term	Topic/Unit title	Essential knowledge and skills (what students should know, understand and be able to do by the end of the unit/topic) Note: ** signifies higher tier only.
Autumn 1	3D Shapes (Higher Tier Students) Handling Data 2 Calculations Graphs 2 (Foundation Tier Students)	<ul style="list-style-type: none"> • Higher tier students work on 3D shapes: <ul style="list-style-type: none"> ○ Name and describe the properties of objects. ○ Make isometric drawings and accurate elevations/plan views. ○ Calculate the volume/surface area of common 3D shapes. Use formulae for more complicated 3D shapes. ○ Solve problems involving similar shapes and objects**. • Handling Data 2: <ul style="list-style-type: none"> ○ Calculate averages from frequency tables and grouped frequency tables. ○ Plot cumulative frequency graphs**, box plots** and histograms** ○ Interpret scatter graphs and describe correlation. ○ Interpret and plot time series graphs. • Calculations: <ul style="list-style-type: none"> ○ Evaluate powers, square roots and cube roots. Evaluate fractional** and negative** indices. ○ Write both large and small numbers in standard index form. Calculate with numbers written in standard index form including in the context of a problem.
Autumn 2	Pythagoras & Trigonometry PPE	<ul style="list-style-type: none"> • Pythagoras' Theorem & Trigonometry: <ul style="list-style-type: none"> ○ Use Pythagoras' theorem to calculate missing sides in right angled triangles.

	<p>Vectors (Foundation Tier Students)</p> <p>Graphs 2 (Higher Tier Students)</p>	<ul style="list-style-type: none"> ○ Use trigonometry to calculate missing sides and angles in right angled triangles. ○ Know the exact trig ratios for angles of 0, 30, 45, 60 and 90 degrees. ● Vectors: <ul style="list-style-type: none"> ○ Add, subtract and multiply column vectors by a scalar. ○ Interpret vectors on a diagram. ● Graphs 2: <ul style="list-style-type: none"> ○ Recognise and sketch graphs of cubics**, reciprocals**, exponentials**, and trigonometric** functions.
<p>Spring 1</p>	<p>Probability</p> <p>Sequences (Foundation Tier Students)</p> <p>Graphs 2 (Higher Tier Students)</p> <p>Further Trigonometry & Vectors (Higher Tier Students)</p>	<ul style="list-style-type: none"> ● Graphs 2: <ul style="list-style-type: none"> ○ Recognise and sketch graphs of cubics**, reciprocals**, exponentials**, and trigonometric** functions. ○ Calculate the gradient of a tangent**. ○ Interpret the area under a graph**. ○ Know the equation of a circle drawn with centre the origin**. ● Further Trigonometry & Vectors: <ul style="list-style-type: none"> ○ Learn and use the sine rule**, the cosine rule** and the area of a triangle formula** to calculate sides, angles and areas of any triangle. ○ Add, subtract and multiply column vectors by a scalar. ○ Interpret vectors on a diagram. Solve geometric problems using vectors including those involving collinear lines.** ● Probability: <ul style="list-style-type: none"> ○ Identify the members of a set. ○ Draw a sample space diagram to solve problems. ○ Use tree diagrams to solve problems.

		<ul style="list-style-type: none"> ○ Use frequency trees to solve problems. ○ Work with conditional probabilities**. <ul style="list-style-type: none"> ● Sequences <ul style="list-style-type: none"> ○ Find the nth term or term-to-term rule for linear sequences. ○ Recognise non-linear sequences including geometric and Fibonacci type sequences.
Spring 2	Sequences (Higher Tier Students) Units & proportionality Exam Preparation	<ul style="list-style-type: none"> ● Sequences <ul style="list-style-type: none"> ○ Find the nth term or term-to-term rule for linear sequences. ○ Recognise non-linear sequences including geometric and Fibonacci type sequences. ○ Calculate the nth term for quadratic sequences**. ● Units & Proportionality: <ul style="list-style-type: none"> ○ Use compound formulae. ○ Recognise direct and indirect proportion on a graph. Calculate formulae for variables which are in proportion and indirectly proportional**. ○ Convert between units of area** and volume**. ○ Interpret gradient as rate of change**. ○ Solve problems involving growth and decay**.
Summer 1	Exam Preparation	