Mathematics Framework for Learning 2022-2023

Year Group	Year 10					
Subject intent	Our curriculum will enable students to: - Learn within a coherent and exciting framework which does not limit students' ambitions. - Develop new skills through a variety of interesting contexts to foster enjoyment. - Develop a rich, deep and secure subject knowledge. - Understand what they are doing well and how they need to improve. - Explore the breadth and depth of the national curriculum. - Improve their spiritual, social, moral and cultural understanding to develop confidence in their own financial and numerical understanding					
Subject Implementation	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Knowledge	**<u>Year 10 Higher:</u>** - Expressions and formulae **<u>Year 10 Foundation:</u>** - Expressions and formulae - GCSE exam practice	**<u>Year 10 Higher:</u>** - Graphs **<u>Year 10 Foundation:</u>** - Graphs - GCSE exam practice	**<u>Year 10 Higher:</u>** - Probability **<u>Year 10 Foundation:</u>** - Probability - GCSE exam practice	**<u>Year 10 Higher:</u>** - Comparing shapes **<u>Year 10 Foundation:</u>** - Comparing shapes - GCSE exam practice	**<u>Year 10 Higher:</u>** - Transformations. **<u>Year 10 Foundation:</u>** - Transformations. - GCSE exam practice	End of Exam preparation and consolidation tasks
Skills	Write and solve equations with fractions, unknown on both sides. Substitute values into expressions involving	Draw a graph from its equation, without working out points. Write the equation	Identify and work out the probabilities of mutually exclusive outcomes and events. Calculate estimates of	Use congruent shapes to solve problems about triangles and other polygons. Work out whether	Recognise and carry out reflections in a mirror line. Reflect a shape on a coordinate grid. Describe a reflection	

	powers and roots. Write and use formulae. Substitute into formulae and then solve equations to find unknown values. Change the subject of a formula. Use the rules for indices for multiplying and dividing. Factorise an expression by taking out an algebraic common factor. Multiply out double brackets and collect like terms.	of a line parallel to another line. Compare graph lines using their equations. Draw graphs with equations like ax + by = c. Rearrange equations of graphs into y = mx + c. Solve problems using simultaneous equations. Draw graphs with quadratic equations in the form $y = x^2$. Interpret graphs of quadratic functions. Draw and interpret graphs showing inverse proportion. Draw and interpret non-linear graphs.	probability from experiments. Decide whether a dice or spinner is unbiased. List all the possible outcomes of one or two events in a sample space diagram. Decide if a game is fair Show all the possible outcomes of two events in a two-way table. Calculate probabilities from two-way tables. Draw Venn diagrams. Calculate probabilities from Venn diagrams.	shapes are similar, congruent or neither. Solve problems involving similar triangles. Use conventions for naming the sides of a right-angled triangle. Use the trigonometric ratios to work out an unknown angle in a right-angled triangle.	on a coordinate grid. Describe and carry out rotations on a coordinate grid. Translate 2D shapes. Transform 2D shapes by combinations of rotations, reflections and translations. Identify congruent shapes. Enlarge shapes using given scale factors. Work out the scale factor given an object and its image.	

Subject Impact	Substitute numerical values into formulae and expressions, including scientific formulae. Understand and use the concepts and vocabulary of expressions, equations, formulae, identities, inequalities, terms and factors. "Simplify and manipulate algebraic expressions (including those involving surds and algebraic fractions) by: ● collecting like terms ● multiplying a single term over a bracket ● taking out common factors ● Expanding products of two or more binomials ● factorising quadratic expressions of the form x2 + bx + c, including the difference of two squares; factorising quadratic expressions	Understand and use the concepts and vocabulary of expressions, equations, formulae, identities, inequalities, terms and factors. Plot graphs of equations that correspond to straight-line graphs in the coordinate plane; use the form y = mx + c to identify parallel and perpendicular lines; find the equation of the line through two given points or through one point with a given gradient. Recognise, sketch and interpret graphs of linear functions, quadratic functions, simple cubic functions, the reciprocal function $y = 1/x$ with $x \neq 0$, exponential functions $y = kx$ for positive values of k, and the	Record, describe and analyse the frequency of outcomes of probability experiments using tables and frequency trees. Apply ideas of randomness, fairness and equally likely events to calculate expected outcomes of multiple future experiments. Relate relative expected frequencies to theoretical probability, using appropriate language and the 0-1 probability scale. Enumerate sets and combinations of sets systematically, using tables, grids, Venn diagrams and tree diagrams. Construct theoretical possibility spaces for	Use the basic congruence criteria for triangles (SSS, SAS, ASA, RHS). Apply angle facts, triangle congruence, similarity and properties of quadrilaterals to conjecture and derive results about angles and sides, including Pythagoras' theorem and the fact that the base angles of an isosceles triangle are equal, and use known results to obtain simple proofs. Apply the concepts of congruence and similarity, including the relationships between lengths, areas and volumes in similar figures. Know the formulae for: Pythagoras' theorem $a^2 + b^2 = c^2$, and the trigonometric ratios, sin θ = opposite/hypotenuse, cos θ =	Use the basic congruence criteria for triangles (SSS, SAS, ASA, RHS). Identify, describe and construct congruent and similar shapes, including on coordinate axes, by considering rotation, reflection, translation and enlargement (including fractional and negative scale factors). Describe the changes and invariance achieved by combinations of rotations, reflections and translations.	

	of the form ax2 + bx + c ● simplifying expressions involving sums, products and powers, including the "laws of indices" Understand and use standard mathematical formulae; rearrange formulae to change the subject. Solve linear equations in one unknown algebraically (including those with the unknown on both sides of the equation); find approximate solutions using a graph.	trigonometric functions (with arguments in degrees) y = sin x, y = cos x and y = tan x for angles of any size. Plot and interpret graphs (including reciprocal graphs and exponential graphs) and graphs of non-standard functions in real contexts to find approximate solutions to problems such as simple kinematic problems involving distance, speed and acceleration. Solve two simultaneous equations in two variables (linear/linear or linear/quadratic) algebraically; find approximate solutions using a graph.	single and combined experiments with equally likely outcomes and use these to calculate theoretical probabilities. Calculate the probability of independent and dependent combined events, including using tree diagrams and other representations, and know the underlying assumptions. Calculate and interpret conditional probabilities through representation using expected frequencies with two-way tables, tree diagrams and Venn diagrams.	adjacent/hypotenuse and tan θ = opposite/adjacent apply them to find angles and lengths in right-angled triangles and, where possible, general triangles in two and three dimensional figures. know the exact values of sin θ and cos θ for θ = 0°, 30°, 45°, 60° and 90°; know the exact value of tan θ for θ = 0°, 30°, 45° and 60°.		
Assessment	Summative and formative	Summative and formative	Summative and formative	Summative and formative	Summative and formative	Summative and formative