Maths
Year 10
Curriculum Overview

THE HART SCHOOL
Creative Education Trust

Intent: During year 10, students will continue to build on learning from KS3 and then develop this into the next stages further. Students will embed skills by practise and learn new aspects of maths which they will continue to build upon in key stage 4. Building deeper connections between topics is key and students will begin during year 10 to embed the links between mathematical concepts.

Foundation	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
	Assessment 1			Assessment 2		
Core Course Topic: These topics are taught through the identified terms. They are taught in small bitesize chunks and revisited regularly.	**Securing Number** • The 4 operations • Powers • Directed numbers • LCM and HCF • Rounding	**Angles and Circles** • Angle facts • Circles • Maps and Bearings	**Numerical Representations** • Fractions • Percentages	**Equations and Inequalities** • Expanding and factorising • Substitution • Linear equations • Simultaneous equations • Inequalities	**Proportion and Rates of Change** • Converting units • Direct and inverse proportion • Growth and decay	**Functions and Graphs** • Linear graphs • Non-linear graphs • Kinematic graphs • Graphical solutions	**Probability** • Single and combines events • Two-way tables • Tree diagrams • Venn diagram • Expected outcomes Relative frequency **Ratio** • Simplifying a ratio • Sharing in a ratio • Ratio and fractions
Additional support links: Here are links to additional resources which will help your child	Sparxmaths is a platform which students use to complete their maths homework. There is also independent practise on there for the students to complete. Here is the GCSE revision list for the assessements with the sparx codes (students need to be logged in to access this) Link					
Knowledge: Included here is the specific knowledge your child will learn in detail	All students will learn to • Calculate sums • Solve problems with negatives • Find LCM and HCF of numbers • Estimate and round numbers • Link knowledge of number to solve problems	All students will learn to • Find missing angles on lines and shapes • Find area and circumference of circles and sectors • Measure and draw bearings • Solve bearing and scale problems • Use map scales	All students will learn to • Use the four operations with fractions and mixed numbers • Find fractions of amounts • Find percentages of amounts • Increase/decrease by a percentage • Compound and simple interest • Use reverse percentages to find original amounts	All students will learn to • Expand and factorise two or more binomials • Substitute into formula • Solve linear equations • Solve linear equations with x on both sides • Solve simultaneous equations • Solve inequalities	All students will learn to • Convert units • Solve direct and inverse proportion word problems • Represent direct and inverse proportion using algebra • Solve growth and decay problems	All students will learn to • Plot straight line graphs • Plot quadratic graphs • Plot real life distance time graphs • Plot conversion graphs • Solve equations using graphs	All students will learn to • Find the probability of an event • Represent two events using two way tables • Represent events using tree diagrams • Draw and read Venn diagrams • Use experimental probability — All students will learn to • Simplify ratio • Solve ratio problems • Write ratio and fractions • Combine ratio
Common Lexicon: These are the key words and terms learnt. These can be found on knowledge organisers.	Order of operations, power, root, LCM and HCF, rounding, truncation, error interval, inequality	Area, perimeter, circumference, diameter, radius, chord, tangent, corresponding angles, supplementary angles, alternate angles, polygons, bearings, ASA, SSS, SAS, RHS, directions	Numerator, denominator, compound, multiplier, simple, terminate, recurring	Equations, inequalities, substitute, simultaneous, equals, term, factor	Proportion, direct, inverse, scale factor, constant of proportionality, unitary method	Function, graph, linear, non-linear, kinematic	Probability, chance, independent, exhaustive, mutually exclusive, tree diagram, Venn diagram, two-way table — Ratio, proportion, sharing, unitary method, fraction, equal
Ambition Curriculum	**Real World: Life Skills** Historical and cultural links to	**Aspirations: Careers** **Real world: Life Skills**		**Real World: Life Skills** The HM Revenue & Customs website uses		**Real World: Life Skills** Link to probability of contextual events	

	number systems taught: History of negatives	Map reading skills and links with Geography link		complex calculations involving brackets to work out how much tax a person owes. Linear programming, finance, comparisons, computer programming.			happening and how companies use this to predict trends.
	Other number systems from history link						Monty Hall problem Link
	Origin of the number 1 Video link						
	Fermi- estimation Video link			Where does River water go? Geography link- reference to Ocean Clean up Video			
	Spending habits, payslips and budgeting. link						

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Higher	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
	Assessment 1			Assessment 2		
Core Course Topic: These topics are taught through the identified terms. They are taught in small bitesize chunks and revisited regularly.	**Circles and Angles** • Angles in parallel lines; interior and exterior angles and basic rules of angles. • Circles and sectors Circle theorems	**Probability** • Basic probability • Tree diagrams • Venn diagrams • Relative frequency • Two-way tables • Conditional probability • Independent events	**Expressions, Equations and Inequalities** • Expressions and identities • Manipulate expressions • Quadratics • Inequalities • Simultaneous equations	**Functions and Graphs** • Function • Proof • Parallel and perpendicular lines • Types of graph • Equations of tangents • Graphical solutions to equations and inequalities	**Numerical Representations** • Operations with fractions, decimals and percentages • Recurring decimals • HCF/LCM • Prime factorisation • Product rule for counting	**Shape and Measure** • Trigonometry • Pythagoras • Perimeter and area • Volume and surface area • Similarity Congruence	**Statistics** • Averages and range from data • Interpreting data **Ratio and Proportion** • Linking fractions, ratio and proportion • Ratio problems • Direct and indirect proportion
Additional support links:	Sparxmaths is a platform which students use to complete their maths homework. There is also independent practise on there for the students to complete. Here is the GCSE revision list for the assessments with the sparx codes (students need to be logged in to access this) Link					
Knowledge: Included here is the specific knowledge your child will learn in detail	All students will learn to • Finding missing angles in parallel lines • Find angles in polygons and exterior angles • Find the area, circumference and perimeter of circles and sectors • Know the circle theorems • Apply the circles theorems • Prove the circle theorems	All students will learn to • Find the probability of an event • Represent two events using two way tables • Represent events using tree diagrams • Draw and read Venn diagrams • Use experimental probability • Use tree diagrams to find probabilities • Conditional probability	All students will learn to • Simplify expressions • Solve quadratics • Solve linear inequalities • Solve quadratic inequalities • Solve linear simultaneous equations • Solve non-linear simultaneous equations	All students will learn to • Evaluate functions • Solve composite functions • Find inverse functions • Use algebraic proof • Find the equations of parallel and perpendicular lines • Identify types of graphs • Find the equations of tangents • Find the solutions to graphs	All students will learn to • Convert recurring decimals to fractions • Find the HCF and LCM of numbers using prime decomposition • Product rule for counting • Calculate with fractions, decimals and percentages	All students will learn to • Use SOH CAH TOA • Solve Pythagoras problems • Use 3D Pythagoras • Apply SOH CAH TOA to 3D shapes • Find the perimeter and area of complex 2d shapes • Find the volume and surface area of any shape • Find missing lengths, area and volume with similar shapes • Prove congruence	All students will learn to • Find averages from grouped data • Plot histograms and cumulative frequency • Plot box plots • Identify trends in data • Compare data All students will learn to • Link
Common Lexicon: These are the key words and terms learnt. These can be found on knowledge organisers.	Angle, Arc, Sector, Radius, Diameter, Centre, Circumference, Subtend, Semi-Circle, Right-Angle and Tangent.	Independent, dependent, conditional, mutually exclusive, and, or	solve, simultaneous, solution, quadratic, linear, substitution	function, inverse, composite, tangent, perpendicular, reciprocal	denominator, compound, depreciate, rationalise, surd, recurring, original	hypotenuse, adjacent, opposite, tangent, sine, cosine, density, vector, parallel, midpoint	grouped data, frequency, mid-point, mean, mode, median proportional, inverse, direct
Ambition Curriculum	**Aspirations: Careers** Links to construction,	**Real World: Life Skills** Link to probability of contextual events happening and how companies use this to predict trends. Monty Hall problem Link	**Real World: Life Skills** The HM Revenue & Customs website uses complex calculations involving brackets to work out how much tax a person owes. Linear programming, finance, comparisons,	Students will build on their algebra knowledge from GCSE and embed it further into more complex skills and contextual situations.	**Aspirations: Careers** Students will learn to work with exact numbers and how this increases accuracy used in engineering, science and finance.	**Aspirations: Careers** This link to wider contexts in construction, engineering and decision maths, History of Trigonometry using early Astronomy Link	**Real World: Life Skills** Links to data in the real world. Use of statistical data in predications with the corona virus Video Link **Aspirations: Careers** Links to contexts in science with proportionality.

			computer programming. Where does River water go? Geography link- reference to Ocean Clean up Video	Exponential growth and epidemics Video link		Astronomy- using Trigonometry to find if the perfect Eclipse can happen on Earth Link	Predicitions with Dr Hannah Fry using statistics Video Link Data in the real world link How accurate is the data we see? Link