Mathematics

Year 10 Crossover
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.
Cross over students will aim for a grade 5 at the end of year 10 following the completion of a foundation paper at PPE 2. Following this mock examination, a decision will be made to which pathway students follow in Year 11.

	Unit 1: Numerical Representations	Unit 2: Ratio and Proportion	Unit 3: Probability	Unit 4: Expressions, Equations and Inequalities	Unit 5: Numerical Powers	Unit 6: Functions and Graphs	Unit 7: Shape and Measures	Unit 8: Representing and Analysing Data	Unit 9: Angles and Circles
	4 Weeks	3 Weeks	3 Weeks	5 Weeks	2 Weeks	3 Weeks	5 Weeks	3 Weeks	4 Weeks
Core Course Topic: These topics are taught through the identified terms. They are taught in small bitesize chunks and revisited regularly.	• Powers • Directed numbers • LCM and HCF • Rounding	• Simplifying a ratio • Sharing in a ratio • Ratio and fractions	• Single and combines events • Two-way tables • Tree diagrams • Venn diagram • Expected outcomes Relative frequency	• Expanding and factorising • Substitution • Linear equations • Simultaneous equations • Inequalities	• Calculate index laws and use of powers • Convert number to standard form • Convert from standard form to ordinary numbers • Calculations with standard form.	• Linear graphs • Non-linear graphs • Kinematic graphs • Graphical solutions	• Constructions • Loci • Transformations • Congruence • Pythagoras • Trigonometry • Area and Perimeter • Volume and Surface area • Vector	• Displaying data • Interpreting data from charts • Averages and measures of spread • Scatter Graphs	• Angle facts • Circles • Maps and Bearings
Additional support links:	Sparx maths is a platform which students use to complete their mathematics homework. There is also independent practise on there for the students to complete. Students will be supported with revision lists for all assessments, through the module introduction sheet or revision guide for larger assessments. The mathematics team also assist with homework club as well as the whole school Homework Club.								
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 • Simplify ratio • Solve ratio problems • Write ratio and fractions Combine ratio • 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 • 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 • 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 • Students will explore standard form and be able to convert into and out of it. They will • calculate with • standard form and • see the links to the • laws of indices and • commutativity.	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 • 2D and 3D shapes, • loci, • constructions, • trigonometry and • Pythagoras Theorem. • vectors	All students will learn to • representing and interpreting data both from diagrams and from raw data. • bivariate data by exploring scatter diagrams • understand that • correlation does not imply causation.	All students will learn to • Find missing angles on lines and shapes • Find area and circumferenc e of circles and sectors • Measure and draw bearings • Solve bearing and scale problems Use map scales
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	Ratio, proportion, sharing, unitary method, fraction, equal, direct, inverse, scale factor, constant of proportionality, unitary method	Probability, chance, independent, exhaustive, mutually exclusive, tree diagram, Venn diagram, two-way table	Equations, inequalities, substitute, simultaneous, equals, term, factor	Base, index, power, commutativity, scale	Function, graph, linear, non-linear, kinematic	Area, perimeter, surface area, volume, face, edge, vertex, Pythagoras, trigonometry, similarity, ratio, transformation, translation, rotation, reflection, enlargement	Data, correlation, estimation, infer, outlier, frequency	Area, perimeter, circumference, diameter, radius, chord, tangent, corresponding angles, supplementary angles, alternate angles, polygons, bearings, ASA, SSS, SAS, RHS, directions

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Ambition Curriculum	**Real World: Life Skills** Historical and cultural links to number systems taught: History of negatives Other number systems from history link Origin of the number 1 Video link Fermi- estimation Video link Spending habits, payslips and budgeting. link		**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, computer programming. Where does River water go? Geography link- reference to Ocean Clean up Video			This link to wider contexts in construction, engineering and decision math's, History of Trigonometry using early Astronomy Link Astronomy- using Trigonometry to find if the perfect Eclipse can happen on Earth Link	Links to data in the real world. Use of statistical data in predications with the corona virus Video Link Predications with Dr Hannah Fry using statistics Video Link Data in the real world link How accurate is the data we see? Link	**Aspirations: Careers Real world: Life Skills** Map reading skills and links with Geography link