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|  | **LONG TERM CURRICULUM PLAN : KS3 & KS4** | **Subject: MATHS** |

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| **Year** | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| Mastery Curriculum. The GLH indicated should be used in full to ensure students demonstrate FLUENCY, can REASON MATHEMATICALLY, and can apply this to PROBLEM SOLVING.Year 7 is a non-calculator year. Curriculum Concepts: **Number**, **Ratio & Proportion**, **Algebra**, **Geometry**, **Measures**, **Statistics**, **Probability**, **Enrichment** |
| **Year 7** | **Number****Calculating 1 (GLH 8)**Four operations with positive whole numbers.Add and subtract decimals. | **Number****Fractions 1 (GLH 8)**Understanding Fractions.Finding Equivalent Fractions.Multiplying Fractions. | **Number****Percentages (GLH 4)**Understanding and using percentages.**Cultural development: Covid 19 government statistics.** | **Geometry****Construction (GLH 8)**Angles in degrees.Construction with a ruler and protractor. | **Ratio & Proportion****Ratio & Proportion 1 (GLH 4)**Understanding ratio. | **Geometry****Transformations 1****(GLH 12)**Position and coordinates in all 4 quadrants.Translation.Reflection. |
| **Algebra****Algebraic Concepts (GLH 8)**Making and using Word Formula.Using letters to representvariables.Combining variables. | **Number****Using our number system 1 (GLH12)**Working with whole numbers.Understanding decimals.Multiplying and dividing decimals by powers of 10.Understanding negative numbers.**Cultural development: Finance**. | **Number****Number Properties 1** **(GLH 8)**Multiples.Factors.Primes.Powers.Tests of divisibility. | **Probability****Probability 1 (GLH 8)**Introduction to probability.Single event probability. | **Statistics****Statistical Measures 1****(GLH 8)**Mean.Median.Mode and Range.**Cultural development: Sports performance analysis.** | **Enrichment****Project 2 (GLH 8)** |
| **Geometry****Properties of Shapes 1** **(GLH 12)**Common Shapes.Line Symmetry.Angle Facts.Rotational Symmetry.**Cultural development: Graphic design of Logo** | **Measures****Units and Scale 1 (GLH 8)**Length/Mass/Time/Volume.Interpreting scales.The Metric System.**Cultural development: Olympic Records.** | **Statistics****Statistical Diagrams 1** **(GLH 12)**Using tables and charts.Stem and Leaf Diagram.Vertical Line charts.**Cultural development: Sports performance analysis** | **Geometry****Measuring shapes 1 (GLH 4)**Understanding area | **Number****Accuracy 1 (GLH 8)**Rounding to 10/100/1000 etc.Rounding to given number of decimal places.**Geometry****3D Shapes 1 (GLH 4)**Properties of 3D shapes. | **Enrichment****Project 2 (GLH 8)** |
| By the end of year 7 all students should demonstrate fluency in calculation with positive integers and the addition and subtraction of decimals. They should be able to multiply and divide decimals by powers of 10 and understand the impact this has on the place value of the digits. Students should apply their understanding of place value to round a number to a given power of 10 or to a given number of decimal places. Students should be able to identify and use negative numbers, prime numbers, multiples and factors. They should have an understanding of the concept of a fraction and percentage and be able to multiply two fractions.Students should have a basic understanding of algebra, demonstrating they can form and solve simple equations and collect like terms in an algebraic expression.All students should have an understanding of shapes, being able to identify both line and rotational symmetry, have an understanding of area and be able to accurately represent a shape by drawing lines to within 2mm and angles to within 2 degrees. They should be able to identify different types of angle and apply angle facts to determine missing angles at a point, on a straight line and in a triangle or quadrilateral.Students should be able to calculate averages for a set of values and find the range, understanding the difference in these measures and when they should be used. Students should be able to represent data in simple statistical diagrams.They should be able to find probability of the occurrence of a single event.Students should understand the metric system of measurement and be aware of metric measurements for length/mass/volume in addition to understanding measurement of time.All students should understand ratio as a means of comparing quantities. |

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| **Year** | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| **Year 8** | **Number****Calculating 2 (GLH 8)**Four operations with positive and negative whole numbers.BIDMAS. | **Number****Fractions 2 (GLH 8)**Adding and subtracting fractions.Working with mixed numbers. | **Algebra****Functions and Graphs 1 (GLH 4)**Real life Graphs. | **Geometry****Construction 2 (GLH 8)**Construction with a pair of compasses.**Cultural development: Navigation** | **Ratio & Proportion****Ratio & Proportion 2****(GLH 8)**Sharing into a given ratio.Working with proportional quantities. | **Geometry****Transformations 2 (GLH 8)**Rotation.Enlargement.Similarity.**Cultural development: Photography.** |
| **Algebra****Algebraic Concepts 2 (GLH 8)**Working with Formulae.Setting up and solving simple equations. | **Number****Using our number system 2 (GLH 4)**Using the number system effectively. | **Number****Percentages 2 (GLH 8)**Calculating percentages of quantities.Converting decimals and fractions to/ and from percentages. | **Probability****Probability 2 (GLH 8)**Combined events.Estimating probability. | **Statistics****Statistical Measures 2****(GLH 4)**Using frequency tables.**Cultural development: Analysis of age-related statistics Covid 19.** | **Enrichment****Project 3 (GLH 8)** |
| **Geometry****Properties of Shapes 2** **(GLH 12)**Angles in triangles andquadrilaterals.Types of quadrilateral. | **Algebra****Sequences 1 (GLH 8)**What is a sequence?Generating Sequences**.** | **Number****Number Properties 2****(GLH 8)**Index Notation.Prime Factorisation. | **Geometry****Measuring shapes 2 (GLH 4)**Finding area and perimeter.**Cultural development: Home improvement (decoration).** | **Number****Accuracy 2 (GLH 4)**Rounding to Significant figures. | **Enrichment****Project 4 (GLH 8)** |
|  | **Algebra****Algebraic Methods 1****(GLH 4)**Trial and Improvement | **Measures****Units and Scale 2 (GLH 4)**Metric/Imperial conversions**Cultural development:****Understanding the change in UK systems of measurement in 1965****Statistics****Collecting Data 1 (GLH4)**Collecting Data.**Cultural development: UK Census every 10 years.** | **Statistics****Statistical Diagrams 2****(GLH 4)**Pie Charts.**Cultural development: Sports performance analysis** |  | **Geometry****3D Shapes 2 (GLH 8)**Understanding nets.Volume and surface area of cuboids.**Cultural development: Material design.** |  |
| By the end of Year 8, all students should demonstrate fluency in calculation with both positive and negative integers understanding the priority of mathematical operations (BIDMAS), Students should apply their understanding of place value to round a number to a given number of significant figures. They should be able to add and subtract fractions and work with mixed numbers. Students should be able to find the percentage of an amount and be able to convert both fractions and decimals to and from percentages. Students should be able to write a given number as a product of its prime factors in index notation and use this to find both the LCM and HCF. Students should develop their understanding of algebra and be able to set up and solve simple equations and work with formulae. They should be able to read and interpret real life graphs and use trial and improvement as a precursor to iterative methods. Students should identify and continue sequences, generating these from a given rule. Students should be able to apply angle facts to find missing angles in a triangle or quadrilateral and be able to identify and distinguish between different types of quadrilateral using their properties. They should be able to find the area and perimeter of common 2-dimensional shapes, find the volume and surface area of cuboids, and identify nets of given 3 dimensional shapes. Students should understand the symmetry of shapes and be able to transform shapes by reflection, rotation and enlargement. Students should be able to use a pair of compasses to perform constructions. Students should develop their understanding of statistics to include the collection of data and the use of pie charts and frequency tables to represent data. They should be able to find the probability of combined events and use relative frequency as an estimate of probability. Students should understand how to convert between metric and imperial units of measurement with a given conversion factor. All students should understand ratio and how to divide a quantity into a given ratio and use proportional quantities. |

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| **Year** | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| **Year 9** | **Number****Calculating 3 (GLH 8)**Multiply and divide decimals without the use of a calculator | **Number****Fractions 3 (GLH 4**Dividing Fractions | **Algebra****Functions and Graphs 2 (GLH 8)**Plotting graphs of Linear functions.Equation of a straight line. | **Geometry****Construction 3 (GLH 8)**Loci**Cultural development: Town Planning** | **Ratio & Proportion****Ratio & Proportion 3 (GLH 8)**The constant of proportionality. | **Geometry****Transformations 3****(GLH 8)**Trigonometry.**Cultural development: Architecture.** |
| **Algebra****Algebraic Concepts 3 (GLH 8)**Using brackets.Working with more complex equations. | **Number****Using our number system 3 (GLH 4)**Writing numbers in standard form.**Cultural development: Astronomy** | **Number****Percentages 3 (GLH 8)**Applying percentage increase and decrease to amounts.Finding the percentage change from one amount to another.**Cultural development: Finance RPI** | **Geometry****Measuring shapes 2****(GLH 12)**Circumference and area of circles.Pythagoras’ Theorem.**Cultural development:****Ancient Greece** | **Number****Accuracy 3 (GLH 4)**Approximating**.** | **Probability****Probability 3 (GLH 8)**The Addition Rule.The multiplication rule.**Cultural development: Insurance and risk.** |
| **Geometry****Properties of Shapes 2****(GLH 8)**Angles & Parallel lines.Angles in a polygon. | **Algebra****Sequences 2 (GLH 8)**Linear sequences.Special sequences.**Cultural development: Fibonacci sequence in nature and the golden ratio in Architecture.****Measures****Units and Scale 3 (GLH 8)**Bearings.Scale Drawing.**Cultural development: Navigation, building design and architecture.****Statistics****Collecting Data 2 (GLH 4)**Designing Questionnaires.**Cultural development: Market Research.** | **Number****Number Properties 3****(GLH 8)**Rules of indices. |  | **Statistics****Statistical Measures 3****(GLH 4)**Using grouped frequency tables.**Cultural development: Analysis of age-related statistics Covid 19.****Geometry****3D Shapes 2 (GLH 8)**2D representations of 3D shapes.Prisms.**Cultural development:****Architecture** | **Enrichment****Project 5 (GLH 8)** |

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(Year 9 Narrative)

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| By the end of Key Stage 3 students should be able to perform all four mathematical operations with both fractions and decimals. They should be able to calculate with indices using the rules correctly. They should know how to write numbers in standard form and convert between numbers written in standard and normal form. Students should have sufficiently developed their understanding of percentages to be able to apply percentage increase and decrease to an amount and be able to calculate the percentage change from one amount to another. They should be able to find an approximate solution to a problem by rounding to one significant figure.Students should continue to develop their understanding of algebra and be able to work confidently with brackets, expanding a single term across a bracket and factorising a linear expression. They should be able to solve simple linear inequalities and represent their solutions on a number line. Students should be able to find the nth term of a linear sequence and be able to recognise special sequences such a Fibonacci. They should be able to plot the equation of a straight line and be aware of yy = mmmm + cc as the equation of a straight line.Students should be able to construct Loci. They should calculate missing angles between parallel lines and be able to provide geometric reasoning for their solutions. They should use and apply angle facts associated with polygons. They should be able to find the area and circumference of a circle and use this for problems involving compound shapes. They should know Pythagoras theorem and the basic trigonometric ratios and apply these to solving problems in right angled triangles. Students should be able to represent 3 dimensional shapes in 2 dimensions.Students should be able to design questionnaires being aware of bias and sampling constraints. They should be able to use grouped frequency tables and calculate averages and range from these.They should be able to apply both the addition and multiplication rule to probability problems for mutually exclusive and exhaustive events.Students should read and interpret scale drawings and calculate with bearings.Students should be able to find and use the constant of proportionality for directly proportional quantities. |

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