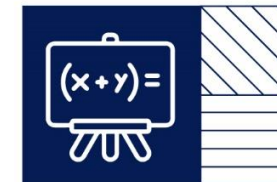




Maths Curriculum Map

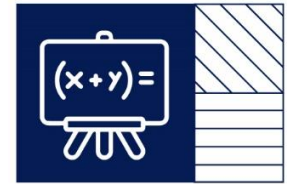


Year	Autumn 1	Autumn 2	Spring 1	Spring 1	Summer 1	Summer 2	Fundamental Learning
9	<p>Foundation: Number Geometry Statistics Recap of arithmetic skills and scale of measures. Recapping using different charts to present data.</p> <p>Higher: Number Geometry Number Recap of arithmetic inc. properties of numbers. Recap of area and perimeter of 2D shapes. Calculations with fractions and mixed numbers.</p> <p>Foundation: <u>Number:</u> 4 operations, BIDMAS, Standard form, directed numbers <u>Geometry 1:</u></p>	<p>Foundation: Number Algebra Converting and calculating using fractions. Manipulation of algebra.</p> <p>Higher: Algebra Statistics Core algebra skills learned previously but now with the introduction of quadratics.</p> <p>Foundation: <u>Number 2:</u> Four rules of fractions, Equivalent, mixed, and improper- CL <u>Algebra 1:</u> Notation, collecting like terms, expanding brackets</p>	<p>Foundation: Geometry Algebra Number Understanding different units of measure. Solving linear equations of various types.</p> <p>Higher: Number Geometry Algebra More advanced percentage calculations. Introduction of trigonometry. Quadratic sequence introduction.</p> <p>Foundation: <u>Geometry 2:</u> Measures- Systems of measurements, Metric- Imperial units. Time /timetables <u>Algebra 2:</u></p>	<p>Foundation: Geometry Statistics Manipulating shapes & transformations. Probability calculations.</p> <p>Higher: Number Geometry Ratio and proportion are harder problems. Using more advanced angle laws to solve problems.</p> <p>Foundation: <u>Geometry 3:</u> Symmetry, congruent shapes, tessellations, transformations <u>Statistics 2:</u></p>	<p>Foundation: Geometry Statistics Algebra Using and applying angle laws and different methods of representing data. Further manipulation of algebra.</p> <p>Higher: Algebra Statistics More challenging data manipulation. Graphing non-linear equations and probability of multiple events.</p> <p>Foundation: <u>Shape 4:</u> Angles- on a straight line, around a point, parallel lines, in shapes <u>Data handling 3:</u></p>	<p>Foundation: Number Geometry Calculations with non-integers and more challenging constructions.</p> <p>Higher: Number Geometry Introduction to rates of change as well as geometrical reasoning and more challenging transformations.</p> <p>Foundation: <u>Number 4:</u> Long multiplication and division, Decimals, Rounding, estimating and approximation <u>Shape 5:</u></p>	<p>Careers links</p>



<p>Reading scales, Estimates, Scale drawing, Nets, and isometric drawings <u>Statistics:</u> Frequency diagrams, Bar charts, Line graphs, frequency polygons Higher: <u>Number 1:</u> Arithmetic with decimals, Estimation using sig. fig, HCF LCM Prime factors (Big numbers & worded problems), Frequency trees <u>Shape 1 :</u> Area recap inc circles & trapeziums, Arcs & Sectors, Volume and SA recap – prism & pyramid/cone/sphere, Real life application problems <u>Number 2:</u> Fractions – One quantity as a fraction of another, mixed numbers/improper, 4 operations with mixed numbers, real life application</p>	<p>Higher: <u>Algebra 1:</u> Recap core algebra: Substitution, expand, simplify, factorise, solve linear equations Double brackets – expand and factorise inc DOTS <u>Statistics 1:</u> Recap: Correlation & Line of best fit, Pie charts, Frequency polygons, Cumulative Frequency inc median and IQR Box plots</p>	<p>Graphs- Conversion and travel, Flow diagrams, Linear graphs, Solving linear equation <u>Number 3:</u> Multiples, Factors, Prime number, square numbers and roots, Powers Higher <u>Number 3:</u> Recap Percentages – increase and decrease, compound interest, reverse % problems Growth and decay problems <u>Geometry 2 :</u> Recap Pythagoras' Theorem Trigonometry: SOH/CAH/TOA Know exact values of key angles (0, 30, 45, 60, 90) FOCUS: Problem solving <u>Algebra 2:</u> Number sequences and linear nth term Rules from patterns Special sequences- Quadratic sequences</p>	<p>Probability – scale, calculations, events not happening Higher <u>Number 4:</u> Ratio – into fractions or %, share, one part known, algebraic application Exchange rates – compare costs <u>Shape 3:</u> Angles, Polygons, On parallel lines Bearings</p>	<p>Pie charts, scatter diagrams, Sampling methods and limitations <u>Algebra 3:</u> Expand and simplify, Factorise, Substitution, Solving 2 step equations Higher <u>Data Handling 2:</u> Averages inc finding missing data when average is known Frequency tables & Grouped data Sampling & its limitations <u>Algebra 3:</u> Linear graphs Finding the equation from the line Quadratic graphs – plotting and key points linking to equation <u>Data Handling 3:</u> Probability Recap Probability trees Independent events Conditional probability</p>	<p>Bearings, Constructions (triangles) Higher <u>Number 5:</u> Speed, Density, Pressure Rate of Flow Graphs (distance, velocity, change <u>Geometry 4:</u> Congruent triangles – identify and explain via ASA, SAS, SSS, RHS 4 transformations, Combined transformations Construction & Loci</p>
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**Prior
Knowledge
Needed**

Pre – Number 1)

An appreciation of place value
Experience of the four operations using whole numbers
Knowledge of integer complements to 10 and to 100
Knowledge of strategies for multiplying and dividing whole numbers by 2, 4, 5 and 10
Four operations
Rounding
Pre – Geometry 1
Units of measurement
Four operations of number
Measure and draw lines accurately. An awareness of the metric and imperial system of measures
Strategies for multiplying and dividing by 10 (for converting metric units)
Knowledge of metric units eg 1 m = 100 cm
Know that 1 hour = 60 mins, 1 min = 60 seconds
Experience of multiplying and dividing by powers of 10, eg $100 \times 100 = 10,000$,

Pre – Statistics 1

Experience of simple tally charts
Understanding of why data needs to be collected and some idea about different types of graphs
Measuring and drawing angles
Fractions of simple quantities
Plotting coordinates and scale
Understanding of the concept of a variable
Recognition that a change in one variable can affect another linear graph
Pre- Number 2
Four operations of number
The concepts of a fraction and a decimal
Multiplication facts
Ability to find common factors
A basic understanding of fractions as being 'parts of a whole unit'
Use of a calculator with fractions
Pre – Algebra 1

Pre – Number 3 The

ability to order numbers.
An appreciation of place value
Experience of the four operations using whole numbers
Knowledge of integer complements to 10 and to 100
Knowledge of strategies for multiplying and dividing whole numbers by 2, 4, 5 and 10
Pre – Geometry 2
An awareness of the imperial system of measures
Strategies for multiplying and dividing by 10 (for converting metric units)
Knowledge of metric units eg 1 m = 100 cm
Know that 1 hour = 60 mins, 1 min = 60 second
Experience of multiplying and dividing by powers of 10, eg $100 \times 100 = 10,000$, $10,000 \div 10 = 1000$
Algebra 2

Pre – Geometry 3

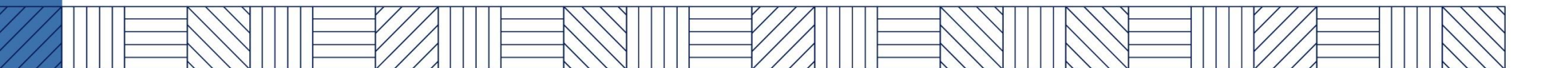
Recognition of basic shapes
An understanding of the concept of rotation, reflection and enlargement
Pre- Statistics 2
Fractions, decimals and percentages
Ability to read from a two-way table
Use and draw two-way tables

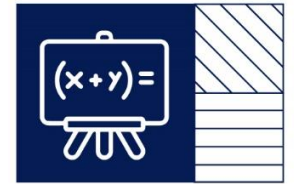
Pre - Geometry 4

An understanding of angles as a measure of turning
The ability to use a ruler and a protractor
Know that angles in a triangle add up to 180°
Know that angles at a point on a straight-line sum to 180°
Know that a right angle = 90°
Measure and draw lines and angles
Pre- Statistics 3
An understanding of why data needs to be collected and some idea about different types of graphs
Measuring and drawing angles
Fractions of simple quantities
Pre- Algebra 3
Experience of using a letter to represent a number
Ability to use negative integers with the four operations

Pre – Number 4

The ability to order numbers
An appreciation of place value
Experience of the four operations using whole numbers
Knowledge of integer complements to 10 and to 100
Knowledge of strategies for multiplying and dividing whole numbers by 2, 4, 5 and 10
Pre- Geometry 5
Knowledge of types of triangles
Knowledge of the difference between a line and a region
Know that angles in a triangle add up to 180°
Know that angles at a point on a straight -line sum to 180°
Know that a right angle = 90°
Measure and draw lines and angles

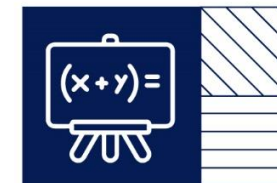




$$10,000 \div 10 = 1000$$

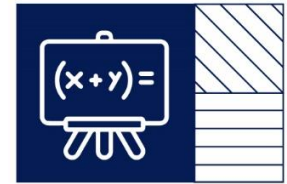
Experience of using a letter to represent a number
Ability to use negative integers with the four operations

Experience of finding missing numbers in calculations
The idea that some operations are the reverse of each other
An understanding of balancing
Experience of using letters to represent quantities
Understand and recall BIDMAS
Substitute positive and negative numbers into algebraic expressions
Rearrange to change the subject of a formula



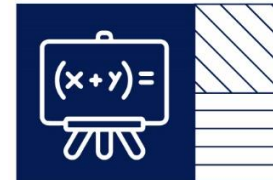
Year	Autumn 1	Autumn 2	Spring 1	Spring 1	Summer 1	Summer 2	Fundamental Learning
10	<p>Foundation: Deeper understand of numbers, more complex algebraic manipulation skills & data processing skills to enhance decision making.</p> <p>Higher: Algebraic skills leaned in KS3 applied to quadratics & cubics, application of complex geometric formulae to find sides/angles and advanced index laws.</p> <p>Foundation: Number 4: Calculator skills inc sums with π</p> <p>Rational numbers and reciprocals</p> <p>LCM, HCF, Prime factors</p> <p>Rules of indices</p> <p>Frequency trees</p> <p>Algebra 3: Simplifying expressions</p> <p>Expanding brackets</p> <p>Factorisation</p> <p>Substitution</p> <p>Statistics 4: Averages</p> <p>Range</p>	<p>Foundation: Developing 2D/3D space understanding & introducing complex a range of percentage problems.</p> <p>Higher: Introduction of inequalities and all the skills required, along with the concept of similar length, area & volume.</p> <p>Foundation: Shape 6: Perimeter</p> <p>Area</p> <p>Volume</p> <p>Surface area</p> <p>Number 5: Equivalent F, D and P</p> <p>Percentage of a quantity</p> <p>Percentage increase/decrease</p> <p>One quantity as a percentage of another</p> <p>Higher: Algebra 5: Inequality number lines</p>	<p>Foundation: Combining the understand of algebraic manipulation & inequalities. Recapping and developing transformations and constructions.</p> <p>Higher: The concept of cumulative frequency and how to use this data effectively along with introduction of circle theorems.</p> <p>Foundation: Algebra 4: Solving equations</p> <p>Equation vs identity</p> <p>Rearranging formulae</p> <p>Inequalities</p> <p>Geometry 7: Transformations</p> <p>Construction</p> <p>Loci</p> <p>Bearing recap</p> <p>Higher: Statistics 4: Cumulative frequency</p> <p>Box plots</p> <p>histograms</p>	<p>Foundation: Ratio & proportion problems and using different methods to find probability.</p> <p>Higher: Introduction of multiple equations in manipulation and proofs, along with the concept of using various methods for conditional & non-conditional probability.</p> <p>Foundation: Number 6: Ratio inc. fractions</p> <p>Best buys</p> <p>Exchange rates</p> <p>Statistics 5: Probability</p> <p>2-way tables</p> <p>Venn Diagrams & sets</p> <p>Higher: Algebra 6 Rearranging formulae</p> <p>Simultaneous equations</p> <p>Algebraic fractions</p> <p>Algebraic proof</p>	<p>Foundation: More challenging sequence & circle problems, understanding & calculating various compound measures.</p> <p>Higher: More challenging 3D space problems and gaining a deeper understand of linear graphs, along with using algebra for proportion problems.</p> <p>Foundation: Algebra 5: Sequences, patterns and nth term</p> <p>Special sequences</p> <p>Geometry 8: Circumference and area of a circle</p> <p>Compound shapes with parts of circles</p> <p>Arcs and sectors</p> <p>Number 7: Speed</p> <p>Density</p> <p>Pressure</p> <p>Rate of Flow</p>	<p>Foundation: Understanding and plotting the several types of graphs. Recapping and adding to angle laws knowledge.</p> <p>Higher: Introduction into the concept of vectors and transformations of different functions.</p> <p>Foundation: Algebra 6: Linear graphs</p> <p>Quadratic graphs</p> <p>Cubic and reciprocal graphs</p> <p>Shape 9: Angle recap</p> <p>Derive the sum of angles in a triangle</p> <p>Higher: Geometry 10 Properties of vectors, vectors in geometry, geometric proof</p>	<p><u>Careers links</u></p>



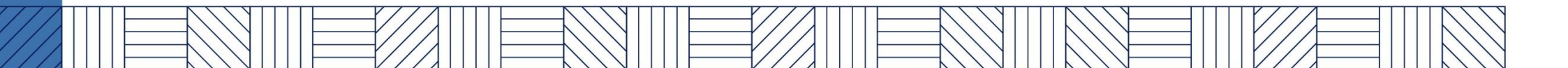


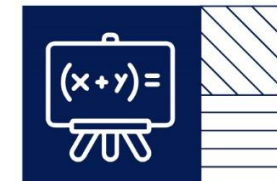
<p>Outliers Frequency tables & grouped data Higher: <u>Algebra 4:</u> Expanding and factorising quadratics Solving quadratics by factorising Expand and factorise triple brackets <u>Shape 5:</u> Pythagoras inc exact values Trigonometry 3D trigonometry and Pythagoras Sine and cosine rule Area of any triangle <u>Number 6:</u> Laws of indices Standard form Rational numbers and reciprocals surds</p>	<p>Solving inequalities Graphing inequalities Solving quadratic inequalities <u>Shape 6:</u> Similar triangles Area and volume of similar triangles</p>	<p><u>Shape 7:</u> Parts of a circle Circle theorems Cyclic quadrilaterals Alternate segment theorem</p>	<p><u>Statistics 5</u> Probability- tree diagrams, independent and conditional, sets and Venn diagrams Algebra in probability</p>	<p>Graphs (distance, velocity, change Higher: <u>Geometry 8</u> Volume and SA of a pyramid, cone, sphere and frustum. Density and real-life applications <u>Algebra 7</u> Graphs- parallel and perpendicular lines, speed graphs, solving graphically and 3d coordinates <u>Number 7</u> Direct proportion, inverse proportion, limits of accuracy</p>	<p><u>Algebra 8</u> Complete the square, recap complex graphs, transformations of the graph $y=f(x)$ normal and trigonometry</p>
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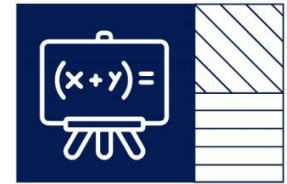
Prior Knowledge Needed	Pre – Number 4	Pre- Geometry 6	Pre- Algebra 4	Pre-Number 6	Pre- Algebra 5	Pre – Algebra 6
	Four operations with whole numbers, fractions and decimals Simplify fractions Convert between improper fractions and mixed numbers and decimals BIDMAS Times tables Understanding of squares, cubes and roots Pre- Algebra 3 BIDMAS Pre- Statistics 4 How to collect and organise data How to draw frequency tables How to extract information from tables and charts	Units of length Concept of area Common units of area Names of 3D shapes Concept of volume Common units of volume Pre- Number 5 Times tables How to simplify fractions How to calculate with fractions How to multiply decimals by 100 How to divide decimals by 100	The basic language of algebra How to collect like terms How to expand brackets Knowledge of inverse operations Pre- Geometry 7 Lines of symmetry Order of rotational symmetry How to find the equation of a line Names of common shapes How to measure lengths of lines accurately How to measure angles with a protractor	Times tables How to simplify fractions How to find a fraction of a quantity How to multiply and divide with and without a calculator Pre- Statistics 5 How to add, subtract and simplify fractions That outcomes of events cannot always be predicted and that the laws of chance apply to everyday events How to list the outcomes of an event in a systematic manner	Basic algebra and how to use letters for numbers How to substitute numbers into algebraic expressions How to solve simple linear expressions How to plot coordinates in all 4 quadrants How to complete a table of values Pre- Geometry 8 How to draw a circle with a compass The words radius and diameter How to round numbers to a specific degree of accuracy Pre- Number 7 Times tables How to simplify fractions How to find a fraction of a quantity How to multiply and divide with and without a calculator	Basic algebra and how to use letters for numbers How to substitute numbers into algebraic expressions How to solve simple linear expressions How to plot coordinates in all 4 quadrants How to complete a table of values Pre- Geometry 9 An understanding of angles as a measure of turning The ability to use a ruler and a protractor Know that angles in a triangle add up to 180° Know that angles at a point on a straight- line sum to 180° Know that a right angle = 90° Measure and draw lines and angles





Year	Autumn 1	Autumn 2	Spring 1	Spring 1	Summer 1	Summer 2	Fundamental Learning
11	<p>Foundation: Number 8: Percentage's recap, compound interest & depreciation, growth & decay, reverse percentages.</p> <p>Algebra 7: Linear graphs recap, equation of a straight line, equation of a line from 2 points, recap quadratic & cubic graphs.</p> <p>Geometry 10: Pythagoras' theorem, trigonometry for right-angled triangles.</p> <p>Higher: Algebra 9: Introduction to functions, inverse & composite functions, approximations using iterations.</p> <p>Geometry 11: Recap sine and cosine rules, recap area of any triangle, complex trigonometry in 2D/3D using surds.</p>	<p>Foundation: Statistics 6: Probability recap, tree diagrams</p> <p>Geometry 11: Similar and congruent shapes, volume of a pyramid, cone & sphere.</p> <p>Higher: Algebra 10: Nth term of quadratic sequences, geometric sequences with common surd ratio, arithmetic sequences with total at a certain point.</p>	<p>Foundation: Algebra 8: Expanding double brackets, factorising quadratics, solving direct & inverse proportion.</p> <p>Number 9: Rules of indices, standard form, limits of accuracy.</p> <p>Higher: Revision algebra Revision Geometry</p>	<p>Foundation: Revision: number and algebra Revision: shape and data.</p> <p>Higher: Revision: data Revision: problem solving</p>	<p>Foundation and higher: Revision</p>		<p><u>Careers links</u></p>





**Prior
Knowledge
Needed**

Pre- Number 8

Times tables
How to simplify fractions
How to calculate with fractions
How to multiply decimals by 100
How to divide decimals by 100

Pre- Algebra 7

Basic algebra and how to use letters for numbers
How to substitute numbers into algebraic expressions
How to solve simple linear expressions
How to plot coordinates in all 4 quadrants
How to complete a table of values

Pre- Geometry 10

How to round numbers to a specific degree of accuracy
How to find the square and square root of a number

Pre- Statistics 6

How to add, subtract and simplify fractions
That outcomes of events cannot always be predicted and that the laws of chance apply to everyday events
How to list the outcomes of an event in a systematic manner

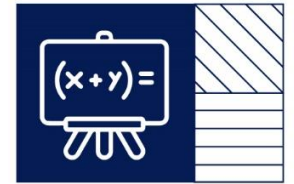
Pre- Geometry 11

How to use and simplify ratio
Enlargement by a given scale factor
Solve fractional equations
Basic area and volume

Pre – Algebra 8

Basic language of algebra
Linear expansion
Linear factorising
Linear solving
Pre – Number 9
Knowledge of squares, square roots, cubes and cube roots
Fractions and algebra





Year 7	Year 8	Year 9	Year 10	Year 11
Jodrell Bank Trip	Investigating outings and workshops	HPA girls in Math UK Maths Challenge	HPA girls in Math UK Maths Challenge UK Maths Feast - Manchester	Maths Revision Workshops

