Curriculum Map
Year 7

Mathematics

Learning Aims and Curriculum Intent:

Our Year 7 Maths curriculum is designed to provide students with a strong foundation of mathematical skills and knowledge, enabling them to develop their problem-solving and critical thinking skills, and use mathematics as a tool in the pursuit of other academic and life goals.

Our teaching approach is aimed at developing a love of mathematics and a positive attitude towards the subject. We strive to ensure that all students can access the curriculum, and they are encouraged to be confident and independent in their learning.

At the start of Year 7, students will be taught basic concepts such as the fractions, decimals and percentages, ratio and proportion, and basic geometry. As the year progresses, students will learn more advanced skills such as algebra, 3D shapes, transformations and interpreting graphs. They will also engage in investigations to develop their analytical and problem-solving skills. Throughout the year, students will be encouraged to use technology to support their learning. By the end of Year 7, students will have a solid understanding of basic mathematical concepts required for future study.

Term	Content, Key Questions and Knowledge	Skills	Assessment
Michaelmas	**How does the number system and four operation work in helping us understand the world?** **1. What are the basic properties of numbers, and how to carry out basic operations to solve problems in real life (e.g. Total cost of multiple items, equal distribution of resources)?** • Place value and ordering decimals • Multiplication and division • Binary numbers • Multiples, factors and primes **2. How to represent and interpret basic statistical graphs (e.g. What is the most popular subject in year 7? If you are good at maths, does this mean you will be good at music?)** • Frequency diagrams • Pie Charts • Scatter graphs • Probability • Sets and Venn Diagrams **3. How to solve problems using various types of numbers (e.g. Altitudes, length of a side of a square, describing patterns, sales and interests)?** • Negative numbers • Calculators and BIDMAS • Powers and Roots • Angle rules • 2D Shapes • Angles in Polygons • Linear Sequences • Rounding • Estimating • Calculations with Fractions • Fractions, Decimals and Percentages • Percentages • Percentage change problems	· Writing place value of a digit · Comparing integers and decimals · Operations with decimals and integers · BIDMAS · Listing multiples of numbers · Listing factors of numbers · Identifying primes · Operations with negative numbers · Evaluate numbers raised to a power · Applying the basic angle rules · Rounding numbers to decimal places · Writing simple probabilities · Ordering a list of integers and decimals · Completing Venn diagrams · Finding HCF and LCM of multiple numbers · Prime factorisation by drawing factor trees · Simplifying fractions · Operations with fractions · Writing percentages · Operation with percentages · Finding percentages of an amount · Rounding numbers to significant figures · Producing statistical graphs (frequency diagram, pie charts and scatter graphs) · Interpret statistical graphs (frequency diagram, pie charts and scatter graphs) · Comparing data from statistical graphs (frequency diagram, pie charts and scatter graphs) · Identifying positive, negative correlations or neither · Listing elements in subsets described by set notations · Comparing and ordering negative numbers · Interpreting physical meaning of directed numbers · Using the calculator to evaluate expressions with negative numbers · Writing integer square-roots or cube-roots of numbers · Estimating the value of a non-integer root · Applying the angle rules related to parallel lines · Applying the formulae for angles related to polygons · Inferring lengths and angles sizes using knowledge on the properties of various 2D shapes · Find the next term in a linear sequence (inducive or deductive) · Find the general term of a linear sequence · Carryout estimation to a calculation by rounding · Conversion between decimal, fraction and percentage · Increase or decrease a number by a percentage · Finding the percentage change in a quantity	Interleaved retrieval quizzes to build knowledge acquisition and retention Topic based common departmental assessments End of Michaelmas

Lent	**How to express and solve real life problems using algebra?** **1. How to model a real life problem with algebra and how to solve the problems by algebraic manipulation? (general mathematical modelling)** • Simplifying expressions • Expanding Brackets • Factorising • Solving equations • Substitution • Writing formulae • Plotting graphs • Linear graphs **2. What are the properties of different shapes and how to solve problems by modelling complex shapes as simple shapes (e.g. perimeter of a house, cross-section area in a pipe, volume of a fish tank)?** • Changing units • Perimeter and Area • Circles • Volume and Surface Area of Cuboids	- Collecting like terms - Multiplying and dividing terms - Expanding single brackets - Expanding a series of single brackets and simplify expressions by collecting like terms - Expanding double brackets - Factorisation of terms with common factor - Solving equations (balancing and transposing) - Substitute value of an unknown into an expression and evaluate - Modelling a problem as a mathematical formula - Filling in table of values - Plotting linear graphs from table of values - Finding the gradient of a line - Identifying the *y*-intercept of a linear graph - Writing the equations of linear graphs - Sketching a linear graph from a given equation - Changing unit for lengths - Changing unit for areas - Finding areas of polygons - Finding areas of circles - Finding areas of composite shapes - Finding perimeters of composite shapes - Finding volumes of cuboids - Finding surface area of cuboids	
Trinity	**How to compare quantities using ratios and solve related problems?** **What are ratios and how does quantities with constant ratio vary with each other? (currencies, map reading, resizing models)** • Ratio and Fractions • Reflection, Rotation and Translation • Enlargement • Constructions • Averages and Range including tables	- Expressing quantities as ratios - Expressing ratios as fractions - Simplifying ratios - Finding equivalent ratios - Finding unit ratios - Finding value of a part - Drawing the image of a reflected object - Drawing the image of a rotated object - Drawing the image of a translated object - Drawing the image of an enlarged object - Drawing the image of an object undergone multiple transformations - Describing a transformation - Constructing various objects using straight edges and compasses (Perpendicular line from point to line, perpendicular bisectors, angle bisectors, equilateral triangles) - Calculating the mean and range of a list of data - Calculation the mean and range from a frequency table	

What consolidation looks like in this subject		
Examples of Homework	Students work through online homework set on platforms such as MyMaths and Mathswatch. Students are also provided with mixed homeworks which promote interleaving and spaced retrieval practice.	
Key terminology	Factors, Multiples, Powers, Roots, Prime Numbers, Fractions, Decimals, Percentages, Sequences, Algebraic Expressions, Formulae, Equations, Angles, Shapes, Transformations, Symmetry, Area, Volume, Perimeter, Length, Mass, Time, Mean, Mode, Median, Probability, Charts, Graphs, Estimation, Approximation	
Super-curricular enrichment and scholarly extension	• **Read:** Sir Cumference books, The Number Devil, The Man Who Counted: A Collection of Mathematical Adventures, The Math Inspectors • **Watch:** Magic Numbers: Hannah Fry's Mysterious World of Maths • **Visit:** The Science Museum (Maths Exhibition); Bletchley Park	
Useful websites	**https://www.bbc.co.uk/bitesize/subjects/zqhs34j** **https://corbettmaths.com/contents/** **https://vle.mathswatch.co.uk/vle/** **https://www.mymaths.co.uk/** **https://nrich.maths.org/secondary** **https://www.mathsgenie.co.uk/gcse.html** **https://mathsbot.com/**	
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