Curriculum Map
Year 8

Maths

Learning Aims and Curriculum Intent:

Term	Content, Key Questions and Knowledge	Skills	Assessment
Michaelmas	**How to express and solve real life problems using numbers and operations?** 1. **How to carry out basic operations and what do they represent in real life (e.g. Shopping lists, distance between planets, length of a side of a square)?** • Decimals • Negative numbers • Fractions • BIDMAS • Fractions, decimals and percentages conversion • Percentages • Power laws • Roots • Standard form 2. **Why do we need rounding and approximations in real life? How to solve problems by estimation?** • Place value • Rounding and Estimating 3. **How to solve problems related to common multiples and common factors (e.g. common time for trains to arrive at a station, buying packs of materials for a party)?** • Prime Numbers and factor trees • HCF and LCM, inc Venn diagrams 4. **How to solve problems using scaling (e.g. finding speed, distance and time, maps, scaling images)?** • Ratio and Fractions • Scale drawings • Changing Units • Compound measures	- Using decimal notations - Ordering integers and decimals - Operations of decimals - Operations of negative numbers - Operations with fractions - Carry out calculations with varied types of numbers using BIDMAS - Conversion between fractions, decimals and percentages - Finding percentages of an amount without calculator - Find percentages of an amount using percentage multipliers (with calculators) - Finding percentages increase/decrease - Finding a percentage change - Finding the original values - Finding value of an amount after compound interest is applied - Evaluating a number raised to a power - Evaluate a number raised to the power of 1 or 0 - Multiplying numbers with the same base - Evaluate integer square-roots and cube-roots - Estimate value of non-integer square-roots. - Writing numbers in standard form (large or small) - Writing numbers in ordinary form - Multiplication and division with numbers in standard form - Rounding numbers to a specific decimal place - Rounding numbers to a specific significant figure - Estimating the answer to a calculation - List and identify prime numbers - Prime factorisation using factor trees - Express a number as its product of prime (including index form) - Finding HCF and LCM by listing - Finding HCF and LCM using Venn diagram - Convert scaled distances to actual distances and vice versa - Write scale ratios in different forms - Convert between linear metric units - Convert between area metric units - Calculate speed, distance and time - Calculate mass, volume and density	Interleaved retrieval quizzes to build knowledge acquisition and retention Topic based common departmental assessments End of Michaelmas

Lent	**How do we solve real life problems by mathematical modelling?** **1. What is algebra and how do we manipulate expressions?** • Simplifying expressions • Expanding brackets • Factorising **2. How do we express a problem as an algebraic expression and solve them?** • Solving equations • Formulae • Inequalities • Graphs **3. How do we express a problem as an algebraic expression and solve them?** • Sequences • Angles • Perimeters, surface areas and volumes	- Collecting like terms - Multiplying terms - Expanding single brackets - Expanding double brackets - Factorise expressions (non-quadratics) - Solving linear equations - Write formulae - Change the subject of a formula - Write inequalities - Show inequalities using number lines - List integer solutions to an inequality - Solve inequalities algebraically - Plotting linear graphs - Find gradient using coordinates or a line - Find y-intercept of a line after rearrangement - Write the equation of a specific line - Estimate the solution of an equation using a graph - Generate any term(s) in a sequence using the nth term - Show whether a term is in a specific sequence - Find the term-to-term rule - Find the nth term for a linear sequences - Identifying arithmetic, geometric, square numbers and Fibonacci sequences - Find the next term of a sequence - Apply simple angle rules - Find angles related to polygon - Solve problem using properties of different polygons - Apply formulae of polygons - Apply formulae of circumference and area of a circle - Find area and perimeter of composite shapes - Find volume of a prism - Find surface area of a prism	
Trinity	**How do we solve real life problems using different geometric shapes and types of diagram?** **1. How do we manipulate geometric shapes and using them to solve problems?** • Transformation • Pythagoras' Theorem • Bearings • Similarity • Constructions **2. How do we use different diagrams to represent data?** • Probability • Sets and Venn diagrams • Averages and Range • Frequency diagrams • Pie Charts • Scatter diagrams	- Identify and describe a transformation - Draw the image of a transformed object - Identify and describe a combined transformation - Draw the image of an object undergone combined transformation - Apply Pythagoras' theorem - Use and interpret bearings - Finding angles and side lengths of similar shapes - Construct perpendicular lines from a point to a line - Construct perpendicular bisectors - Construct angle bisectors - Construct triangles - Find experimental probability - Use the fact that probabilities of all possible outcome sum to 1 - Find expected frequency - Identify biased or fair events - Draw and use sample space diagrams - Use set notations - Draw Venn diagrams - Use Venn diagrams and set notation to count elements and find probabilities - Find mean, mode, median and range - Find mean, mode, median and range for grouped data - Draw and interpret bar chars and pictograms - Draw and interpret pie charts - Draw and interpret scatter graphs - Identify types of correlation - Draw a line of best fit - Estimate values using a line of best fit	

What consolidation looks like in this subject	Watch videos on [MathsWatch](#) to refresh memory Practice using materials listed on "Useful website"
Examples of Homework	Interleaved retrieval quizzes to build knowledge acquisition and retention
Key terminology	Solve, show that, evaluate, verify, explain, prove, analyse, hence or otherwise

Super-curricular enrichment and scholarly extension	**Read:** Secondary Students (maths.org) **Watch: TED talks Maths in unexpected places** **Listen: Radio 4 mathematics collection** **Visit: The Science museum, The Winton Gallery Mathematics**
Useful websites	Maths Genie - Free Online GCSE and A Level Maths Revision Videos and Worksheets – Corbettmaths Maths Teaching Resources | Dr Austin Maths Variation Theory – Sequences and behaviour to enable mathematical thinking in the classroom – by Craig Barton @mrbartonmaths

Who can I contact?	**Head of Department**	
	Teachers	