Curriculum Map
Year 9

Mathematics

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?** **How to carry out basic operations and what do they represent in real life (e.g. Shopping lists, weight of cake, multiples of packs, sharing amounts)?** • Arithmetic, Multiples and Factors • Fractions & Decimals • Approximations **What are proportions and how to find amounts as parts of a whole (e.g. finding amount from recipes, compare concentrations, currency exchange)?** • Percentages • Ratio and Proportion **What is algebra and how do we solve real life problems by mathematical modelling?** • Expressions • Powers and Roots • Formulae • Equations	- Arithmetic and BIDMAS of integers, decimals, fractions and multiplication - Simplifying fractions - Prime factor decomposition - Finding HCF and LCM using Venn diagrams and indices - Rounding (places and s.f.) - Finding Approximations and Bounds - Finding percentage of amounts (amounts, increase, decrease, interests) - Finding whole amounts - Finding simplified and equivalent ratios (1-step / multi-step) - Simplifying expressions - Expanding and factorising single and double brackets (include perfect square and difference between two squares) - Raising rationals to a power - Applying index laws - Simplify surds - Operation with surds - Operation with numbers in standard form - Writing formulae - Substitution - Solving equations by rearranging	Interleaved retrieval quizzes to build knowledge acquisition and retention Topic based common departmental assessments End of Michaelmas
Lent	**How to view the world in geometry and use it to solve problems?** **What are the angle properties of each type of geometric objects, and how to we transform shapes?** • Angles and 2D Shapes • Transformations **How do we find lengths and angles of right-angled triangles?** • Pythagoras' Theorem • Trigonometry **How to describe patterns using expressions and solve problems (e.g. taxi fare, different loan plans, supply-demand)?** • Sequences • Functions • Straight Line Graphs • Simultaneous Equations	- Applying basic angle rules - Finding angles in parallel lines - Finding angles in triangles and polygons - Drawing images of reflected and rotated object - Describe the transformation an object has undergone - Applying Pythagoras' theorem and solve for unknowns - Applying formulae for each trigonometric ratios to solve for unknowns - Identify angles of elevation and angle of depression - Deciding whether to use Pythagoras' theorem or trigonometric ratios to solve a problem - Identify pattern and find the next term using term-to-term rule - Identify types of sequences - Finding the nth term of a linear sequence. - Interpreting the function notation - Finding output and input of a given simple function - Find the domain and range of a function - Plotting linear graphs - Finding gradient between two points - Identifying the y-intercept - Determining the m and c values of a given line (algebraically and graphically) - Finding the gradient of a perpendicular line to a given line - Finding equations of parallel and perpendicular lines - Solving linear simultaneous equations by substitution (rearranging required)	

| Trinity | **How to solve more complex real-life problems?**

How to use percentages in real life? (Interests, sales and promotions, statistical analysis)
• Percentages

How to solve problems with power and surds? (Finding length given area or volume, compound interest)
• Powers and Roots
• Perimeter and Area
• 3D Shapes

How to solve problems using circle?
• Circle Geometry

How to interpret data numerically and graphically?
• Averages and Range
• Sets | - Using percentages multiplier to find percentage of an amount, percentage increase/decrease
- Simplifying surds
- Operation with surds
- Rationalising denominators
- Expanding brackets and simplifying expressions involving surds
- Using percentage and power to solve problems involving compound problems
- Finding area, perimeter and lengths of polynomials involving surds
- Finding volumes of prisms
- Finding angles and lengths related to circles using circle theorems
- Finding different averages and ranges of a set of data
- Finding different averages and ranges of a set of grouped data
- Finding the quartiles and medians of a set of data
- Finding the quartiles and medians of a set of grouped data
- Interpreting basic set notations
- Drawing and interpreting Venn diagrams
- Listing sets from a Venn diagram | |

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	