CURRICULUM MAP (Long term plan)

SUBJECT:_____MATHS_____ **YEAR GROUP ____8_____**

	Cycle 1 **Autumn**	**Cycle 2** **Spring**	**Cycle 3** **Summer**
Substantive knowledge – Essential knowledge & conceptual understanding of the National Curriculum	Geometry, number and algebra **G6 – Polygons** **A4 – Solving equations** **N8 – Fractions, decimals and percentages** **G6 – Circles** **G7 – Volume and surface area** **A5 – Sequences** **G8 – Loci and construction**	Number, Proportion, Algebra, statistics and probability **N9 – Using a calculator and accuracy** **A6 – Equations of straight lines** **S2 – Representing data** **N10 – Proportion** **P2 - Probability**	Algebra, Statistics, geometry and functional skills **S3 – Averages from tables** **A7 – Using formulae and equations** **A8 – Using graphs** **PE1 – Problem solving** **G9 – Transformations** **PE2 – Project work**
Disciplinary knowledge - what skills are practised?	**G6 – Polygons** - Names and angles in polygons - Calculations with interior and exterior angles - Calculate areas of trapezium and parallelogram **A4 – Solving equations** - Expanding brackets and simplifying - Solving linear equations **N8 – Fractions, decimals and percentages** - Converting and comparing fraction, decimal and percentages - Converting simple recurring decimals **G6 – Circles** - Calculate the circumference and area of a circle - Calculate the area and perimeter of sectors	**N9 – Using a calculator and accuracy** - Using a scientific calculator and it's functions, effectively - Round solutions to a given accuracy - Work out intervals and bounds for rounded numbers and calculations **A6 – Equations of straight lines** - Understand the straight line format y=mx+c - Calculate gradient from a line segment or coordinates - Plotting lines from a table of values - Read and state the equations of vertical and horizontal lines **S2 – Representing data** - Understand different types of data (discrete, continuous, qualitative, quantitative, primary, secondary) - Design and critique surveys	**S3 – Averages from tables** - Calculate averages from frequency tables for discrete data **A7 – Using formulae and equations** - Expand and factorise single brackets - Form and solve equations for problems - Change the subject of a formula - Using algebra in different context for problem solving **A8 – Using graphs** - Know and use the distance, speed and time relationship for constant speed - Read, interpret and construct speed/time graphs - Use and read information from graphs in context **PE1 – Problem solving**

	G7 – Volume and surface area - Calculate 3D shape surface area - Calculate the volume of 3D shapes **A5 – Sequences** - Finding and using the nth term rule for linear sequences - Generating a sequence from an nth term rule - Plot values from an nth term rule against position **G8 – Loci and construction** - Constructing triangles (SAS, ASA and SSS) - Construct angle bi-sectors and perpendicular line bisectors - Draw loci paths and regions including: equidistant from a point, a line, between 2 points, between 2 lines.	- Interpret and construct pie charts **N10 – Proportion** - Understand the concepts of direct and inverse proportion - Plotting the relationships of proportion - Answer questions on recipe problems - Use conversion graphs - Calculate values using proportion **P2 – Probability** - Calculate probability of a single event - Interpret and construct sample space diagrams - Reason and estimate with experimental probability and relative frequency	- Targeted problem solving and number skills **G9 – Transformations** - Reflection in lines - Rotation of shapes from a point by a given amount - Translation of shapes using a vector - Enlargements of shapes by a given scale and centre - Read and make scale drawings **PE2 – Project work** - Targeted mini project and purposeful functional practise
Key questions (What is the learning about?)	Can students check their answers from a solved equation? Do students have a secure understanding of the properties of shapes? Do students have accurate construction skills and know how to use the equipment effectively? Do students know the link between loci and constructions? Can the students generate terms of a sequence from a term-to-term rule and position-to-term rule? Are the students able to make and test conjecture about patterns and relationships? Are the students able to recognise arithmetic sequences?	Can students apply estimation in a variety of contexts? Do the students understand the difference between direct and inverse proportion? Do students have a basic understanding on using the school specified calculator? Are students able to transfer their knowledge on equations to using formulae? Can students critique surveys and spot flaws and bias? Can the students sketch and produce graphs of linear functions using equations x and y?	Have the students a secure understanding of manipulating expressions and linear equations? Can the students make connections between number relationships and their algebraic and graphical representations? Can the students construct and interpret appropriate tables, charts and diagrams for ungrouped and grouped numerical data? Do students have a robust method for manipulating equations to solve them?

		Are the students able to apply statistics knowledge to draw a variety of graphs and tables?	
Assessment	Live marking during the lesson with misconceptions addressed during the lesson. End of topic PPC for each topic EOTT	Live marking during the lesson with misconceptions addressed during the lesson. End of topic PPC for each topic EOTT	Live marking during the lesson with misconceptions addressed during the lesson. End of topic PPC for each topic EOYT
Literacy (L),**Numeracy** (N), **Oracy** (O) **opportunities**	Word problems presented to students each lesson where they have to understand the mathematical vocabulary to solve the problems. Answers to questions posed by the teachers are answered using mathematical language with reasoning where appropriate developing key vocabulary and confidence in talking mathematically. Peer on peer support when answering questions in class. Key words are displayed at the beginning of a new lesson. Spellings are corrected during live marking and book reviews.		
Cross Curricular Opportunities	Links to DT and Art.	Ratio and Proportional Reasoning links to Food Tech. Links to Citizenship (statistics), graphs with ICT and Geography for representation of data.	Links to science - DST graphs
Super Curriculum (personal development)	F1 Maths in Motion Club UKMT Challenge Sparx maths	F1 Maths in Motion Club UKMT Challenge Sparx maths	F1 Maths in Motion Club and Trip UKMT Challenge Sparx maths HFL maths challenge
Careers	Careers will be referenced within the teaching of each topic outlining how maths is used in a vast array of careers - not just at university level. Inspiring careers using maths: Spy careers at GCHQ Women in Stem careers How to become a quantity surveyor		
Equality and Diversity Gender Disability Religion Race Sexuality	Diverse representation used with slides presented to students. Maths display boards has a Mathematician of the Month and also Famous Mathematicians from Around the World. Timeline of greatest mathematicians and where they are from Top 10 greatest women mathematicians		
Local Community Links	N/A	N/A	N/A

British Values Democracy The rule of Law Individual Liberty Mutual Respect and Tolerance of others SMSC Character Education	Across the school, we encourage respect including teaching the value of listening to others views and opinions on problem solving. Students know it is okay to make mistakes and know this is how we learn; we encourage students to find their specific errors and then learn from these leading to deeper learning. In classrooms, we look for opportunities for pupils to use mini-whiteboards to promote self-esteem and build self-confidence. Collaborative learning in the classroom is encouraged in the form of listening and learning from each other which develops their mathematical voice and logical reasoning skills. We participate in team maths challenges for increased pupil involvement. We explicitly teach areas of Maths in lots of different subjects across the school to show students the importance of Maths in different roles, for example: statistics in Geography and Science; finance in Citizenship; chronology in History and proportion in Food Tech.