Maths Curriculum Map

Year Group		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Y7	KS3 spiral thematic topic						
	Topic	**<u>Number - Place Value</u>** Students will often leave primary school with a love of numbers. This unit will help support the students to continue to build on that. They will be learning about the value of numbers and how these numbers can be represented in a variety of ways. They will explore numbers as a whole as well as broken down into units, tens and hundreds.	**<u>Number - 4 Operations Addition, Subtraction, Multiplication and Division</u>** The next unit will focus on the 4 basic operations of Maths, Addition, Subtraction, Multiplication and Division. The students are able to access this when they have a secure knowledge of place value and how numbers are represented. The students will study how numbers can be manipulated and changed through these operations. They will also study a range of techniques through each operation.	**<u>Number - Fractions, decimals and Percentages</u>** The next unit will focus on Fractions, Decimals and Percentages. The students will be able to access this next unit when they have understood the operations of numbers. The students will study how numbers can be split and represented as whole numbers and partial numbers.	**<u>Measurement</u>** The next unit will focus on Measurement. This will include different units of measure and how these can be represented with different objects. The students will study different units and how these can be represented in different ways, also comparing measurements together, how they can represent the same length in different units of measure.	**<u>Geometry</u>** The last unit will focus on Geometry. This will include a variety of shapes such as 2D and 3D shapes. The students will study the characteristics of different shapes such as how many sides the shape has. The students will also look at how shapes can be measured such as perimeter. The students will be able to access this unit when they have a secure knowledge of numbers and measurement.
	Topic vocabulary	Units, tens, hundreds, small, large	Addition (add, plus) Subtraction (take away, minus) Multiplication (times, multiply) Division (share, divide)	Half, quarter, percent, split, divide	Length, size, units, measure	Shapes (square, rectangle, triangle, circle), perimeter	
	Disciplinary literacy link	**Reading:** Reading different numbers in numerical/worded terms. **Writing:** Writing the numbers in broken down terms, units, tens and	**Reading:** Reading numbers, words and symbols in questions given to them. **Writing:** Writing questions for the four basic operations and using the correct symbols.	**Reading:** Reading numbers in a variety of ways, fractions, decimals and percentages, knowing they all represent a number.	**Reading:** Reading different units of measure in words and abbreviations. Reading questions they are given as words and units.	**Reading:** Reading the names of shapes and what their characteristics are. Reading different units when looking at perimeter.	

		hundreds. **Spoken Language:** Discussing numbers and how the numbers show a different value.	**Spoken Language:** Discussion of different techniques that they know and understand when completing questions using the four operations.	**Writing:** Writing numbers as fractions, decimals and percentages. Answering questions in books to demonstrate their ability to write numbers in different ways. **Spoken Language:** Discussing how numbers can be broken into partial numbers and understanding how one number can be represented by all fractions, decimals and percentages.	**Writing:** Writing units of measure when answering questions and identifying which units of measure are needed for different objects. **Spoken Language:** Discussing which units of measure can be used for different objects. The students will use discussion to communicate problem solving ideas and mathematical representations.	**Writing:** Writing names of different shapes and their characteristics. Drawing different shapes and labeling their characteristics. **Spoken Language:** Students to discuss as a group what characteristics each shape has and why. Students to communicate the mathematical representations of shapes and how these can be used in every day situations.
	SMSC/International dimension link to build cultural capital	**Social:** ● Collaboration: Place value concepts are often explored through group activities, encouraging teamwork, communication, and healthy competition **Moral:** ● **Accuracy and Precision:** Place value emphasizes the	**Social** ● Working with peers on problems involving the four operations strengthens **communication** and **collaboration** skills .**Moral** ● The four operations promote **honesty** and **accuracy** through precise calculations. **Cultural** ● The four operations are found in various cultures throughout history, highlighting the **universality** of mathematics as	**Social** ● Working with fractions, decimals and percentages encourages communication and collaboration. Students can explain their thinking, justify their solutions and learn from each other's approaches. This fosters teamwork and problem-solving	**Social and Cultural** ● Measurement is a fundamental tool used across societies and cultures to quantify the world around us. It allows us to build structures, share resources fairly, and communicate	**Social** ● Discussing and explaining geometric concepts helps students develop effective communication and collaboration skills. **Moral** ● Geometry promotes critical thinking and problem-

		importance of accuracy in representing and manipulating numbers, fostering a sense of responsibility and attention to detail. **Cultural:** ● **Number Systems:** Understanding place value allows students to appreciate the development of number systems across different cultures and historical periods. **Spiritual:** ● **Curiosity and Wonder:** Place value opens doors to a deeper understanding of the world around us, fostering a sense of wonder and curiosity about the structure of numbers and their applications.	a language. **Spiritual** ● The four operations encourage **logical thinking** and **problem-solving**, fostering a sense of wonder and appreciation for the order and structure in the world.	skills in a social setting. Furthermore, these concepts are used in various professions and everyday situations, promoting preparation for future social interactions and participation in a globalized world. **Moral** ● Understanding fractions, decimals and percentages allows students to make informed decisions in real-world contexts. This could involve budgeting (e.g., calculating percentages of income for savings), following recipes accurately (using fractions of ingredients) or ensuring fair distribution of resources (dividing using	effectively. **Moral:** ● Accurate measurement is essential for fairness and justice. It underpins many aspects of society, from scientific research to trade and commerce. **Spiritual:** ● Through measurement, we can develop a deeper understanding of the universe and our place within it. It allows us to appreciate the order and precision that exists in the world.	solving skills, encouraging students to approach challenges logically and systematically. **Spiritual** ● Geometry fosters a sense of awe and wonder by revealing the beauty and order inherent in shapes and spatial relationships. pen_spark

				fractions). By applying these concepts ethically, students develop a sense of responsibility and justice. **Spiritual** ● Fractions, decimals and percentages can be used to explore ideas of fairness, equity and proportion. Students can develop a sense of awe at the interconnected ness of mathematics in the natural world, where these concepts are fundamental. For example, exploring ratios in nature (e.g., the Golden Ratio in sunflowers) can spark curiosity about the underlying mathematical order.		

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	Horizon Skills (Link to careers)	**Create:** Students will be given many chances to create their own opportunities to develop relationships with others through teamwork in lessons. They will be given many opportunities to take their own initiative when learning and build their imagination and flexibility.	**Growth:** Students will be able to explore how their knowledge of number and the 4 basic operations will support them in earning qualifications in order to progress into a career. They will be able to build their resilience in challenging themselves and trying new things they may find difficult in a safe environment.	**Explore:** The students will be able to explore a variety of job opportunities when they have a solid understanding of Number as a topic but also with the extended knowledge of Fractions, Decimals and Percentages. Also they will be able to explore the pathway they can take to achieve these career goals, such as college, university, apprenticeships.	**Growth:** The students will be able to grow by reflecting on themselves and the work they complete. They will be given opportunities to record their work and share their achievements with others. This unit will help challenge the students and encourage them to try new things that they may not think of.	**Explore:** The students will learn about different job roles that can be specific to Maths, when looking at this last unit, the students will be able to see how Maths can be used in a wide range of careers and what knowledge they need to explore specific job roles.
	Knowledge and skills	• **Define:** Explain the value of each place value column • **Identify:** Identify the value of any digit in a 3-digit number • **Explain:** Explain why one number is larger/smaller	• **Define:**.Define each basic operation and how they manipulate numbers. • **Identify:** Identify the symbols for each of the 4 basic operations. • **Explain:** Explain how the number changes after using the basic operations. • **Analyse:** Consider how each operation is used in everyday	• **Define:** Define each term of fractions, decimals and percentages and how they represent numbers. • **Identify:** Identify the symbols that	• **Define:** Define each term of measurement and what they represent. • **Identify:** Identify which unit of measure	• **Define:** Define different shapes, both 2D and 3D shapes. • **Identify:** Identify the different characteristics each shape holds.

		than another ● **Analyse:** Compare two different numbers ● **Evaluate:** Compare the value of two different numbers (units and tens) ● **Craft/Write/Create:** Write the value of each number in a 3 digit number	situations. Addition is for combining things, subtraction is for taking ● **Evaluate:** Dictate the sequence in which operations are performed. ● **Craft/Write/Create:** Write the symbols of the 4 basic operations and create questions using the operations.	are used with these terms and identify the conversions between them. ● **Explain:** Explain how these terms are linked together and how they can represent one part of a whole number in different ways but have the same value. ● **Analyse:** Compare different numbers and how these can be represented in Fractions, Decimals and Percentages. ● **Evaluate:** Evaluate how part numbers can be written in different ways but still represent the same value. ● **Craft/Write/Create:** Write a variety of numbers in all different forms of Fractions, Decimals and Percentages.	can be used to measure different objects. ● **Explain:** Explain what objects can be measured in everyday objects and which measurements will be used. ● **Analyse:** Analyse the data collected when measuring different objects ● **Evaluate:** Compare measurements and how they can be linked together to represent the same value. (1cm = 10mm) ● **Craft/Write/Create:** Create own objects, pictures to measure and write which measureme	● **Explain:** Explain the difference between 2D shapes and 3D shapes ● **Analyze:** Compare different shapes and how their characteristics change depending on the shape. ● **Evaluate:** Evaluate the similarities and differences between the shapes. ● **Craft/Write/Create:** Create their own shapes and label the characteristics and label the lengths of the sides to be able to calculate the perimeter of each shape.

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					nts they would use.	
	Assessment	**Component knowledge Exit Ticket:** What are the different values of 3 digit numbers? Can they demonstrate a solid understanding of how these numbers can be represented?	**Component knowledge Exit Ticket:** What are the 4 basic operations? Can they demonstrate a solid understanding of the 4 basic operations through questions and calculations?	**Component knowledge Exit Ticket:** Can they write one part number in all 3 forms of Fractions, Decimals and Percentages? Can they demonstrate an understanding of converting Fractions, Decimals and Percentages?	**Component knowledge Exit Ticket:** What different measurements can be used? Can they demonstrate a solid understanding of the different measurements and compare different measurements that share the same value?	**Component knowledge Exit Ticket:** What is the difference between 2D and 3D shapes? Can they demonstrate a solid understanding of different characteristics of both 2D and 3D shapes and how they can be similar and different?

Year Group		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Y8	KS3 spiral thematic topic	Number: Four Operations Addition, subtraction, multiplication and division					
	Topic	Number - Addition, Subtraction, Multiplication and Division		Probability	Ratios	Statistics	Algebra
	Topic vocabulary	Addition (plus, add, sum of) Subtraction (minus, subtract, difference) Multiplication (times, multiply, product) Division (share, divide, equal, remainder)		Outcome, frequency, likely/unlikely	Proportion, simplify, rate, scale	Data, representation, Summary, Distribution	Variable, expression, equation, simplifying

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	Disciplinary literacy link	**Reading:** To read worded Maths problems relating to the four operations **Writing:** Write 3 or 4 digit numbers in words **Spoken Language:** Verbalize what each of the four operations are and discuss how they work.	**Reading:** To read worded Maths problems that investigate the likelihood of something happening. **Writing:** Adverbs of possibility - certainly, probably etc **Spoken Language:** Be able to clearly verbalize the likelihood of an event occurring	**Reading:** To read and understand the key concepts of ratio in worded, real life problems. **Writing:** Use comparative adjectives to compare **Spoken Language:** Be able to explain and discuss verbally the concept of ratio and how things can be split	**Reading** To read and understand different statistics displayed in a variety of ways (bar graph, line graph etc) **Writing** Writing sentences relating to the data shown - eg, the most popular form of transport was a car **Spoken Language** To be able to discuss and debate what the data shows us and draw conclusions from the data.	**Reading** To be able to read worded problems that involve a missing value. **Writing** Be able to write and explain the missing value in an equation. **Spoken Language** To discuss and verbalize how to find the value of a missing digit in a equation.
	SMSC/International dimension link to build cultural capital	**Spiritual:** The four operations encourage **logical thinking** and **problem-solving**, fostering a sense of wonder and appreciation for the order and structure in the world. **Moral:** The four operations promote **honesty** and **accuracy**	**Spiritual:** Probability encourages students to consider the inherent randomness in the world and develop a sense of wonder at the underlying order that can still be found. It allows them to explore concepts of chance and uncertainty, which can connect to broader questions about fate and free will.	**Spiritual:** Ratios can be used to explore patterns and relationships in the world around us, fostering a sense of wonder and curiosity about the underlying order in the universe.	**Spiritual:** Develop a sense of wonder and curiosity about the world through exploring patterns and relationships within data. **Moral:** Develop a strong	**Spiritual:** Curiosity and questioning: Algebra encourages exploration of patterns and relationships, fostering a sense of wonder about the underlying structure of the world.

		through precise calculations.. **Social:** Working with peers on problems involving the four operations strengthens **communication** and **collaboration** skills. **Cultural:** found in various cultures throughout history, highlighting the **universality** of mathematics as a language.	**Moral:** Probability helps students understand fairness and develop a sense of justice. They learn to evaluate risks and consequences, which can be applied to making ethical decisions in real-world situations. **Social:** Probability allows students to analyze data and understand chance events in a social context. They learn how statistics are used to represent populations and can critically evaluate information presented in everyday life. **Cultural**: Probability has applications across diverse cultures, from games of chance to risk assessment in various fields. Studying probability allows students to appreciate the universality of these concepts and their role in different societies.	**Moral:** Understanding ratios promotes fairness and justice. Students can explore concepts like equal ratios representing equal shares and solve problems involving fair division of resources.. **Social:** Working with ratios requires clear communication and explanation. Students can practice explaining their reasoning and justifying their solutions, fostering collaboration and teamwork **Cultural** Ratio is a universal mathematical concept with applications across cultures and disciplines. By studying ratio, pupils can develop a broader understanding of the world and appreciate the	sense of fairness and justice by analyzing data related to social issues and inequalities. **Social:** Develop effective collaboration and communication skills through group data analysis and presentation. **Cultural:** Explore cultural differences in data collection, interpretation, and use through comparative studies.	**Moral:** Precision and accuracy: Algebra emphasizes the importance of getting things right, fostering a sense of responsibility and a commitment to excellence. **Social:** Collaboration and communication: Working on problems together, explaining solutions, and learning from peers fosters teamwork and effective communication skills. **Cultural:** Real-world applications: Connecting algebraic concepts to real-world problems demonstrates the relevance of mathematics to various cultures and disciplines.

				interconnectedness of different societies and their contributions to mathematical knowledge.		
	Horizon Skills (Link to careers)	Explore: being aware that many jobs require learning, skills and minimum qualifications	Manage: being aware that career describes their journey through life, learning and work	Create: being aware of the concept of entrepreneurialism and self-employment	Big Picture: being aware of a range of different media, information sources and viewpoints	Balance::being aware of the concept of work-life balance
	Knowledge and skills	**Define:** Explain each of the four operations and their use **Identify:** The symbols for each of the four operations **Explain:** The the use of each operation **Analyse:** The effect each operation can have in an equation **Evaluate:** When to use each of the four operations **Craft/Write/Create:** Write and develop own written problems that can be solved using the four operations.	**Define:** State clearly what probability is **Identify:** The likelihood of something happening/not happening **Explain:** How likely something is to happen **Analyse:** data to determine the likelihood of something happening. **Evaluate:** What format to show probably (fraction/percentage) **Craft/Write/Create:** Be able to write/create a set of data that shows the probability of something happening.	**Define:** Ratio and what how it functions **Identify:** the size of an amount in relation to another **Explain:** When ratio is used - eg, recipes etc. **Analyze:** How many parts to another something may have in certain examples (chemicals) w **Evaluate:** When ratio could be used to solve certain mathematical problems. **Craft/Write/Create:** Be able to write/create mathematical problems that require ratio to be used.	**Define:** Be able to express what statistics are and how they can be used **Identify:** Be able to interpret and draw conclusions from sets of data **Explain:** Be able to explain precisely what a set of data shows **Analyze:** Be able to understand and interpret statistics presented in different ways. **Evaluate:** Be able to explain what a set of data	**Define:** Clearly able to explain algebra and how methods used to find missing values in equations. **Identify:** be able to identify the missing value in an equation. **Explain:** How to find the missing value **Analyze:** Try different methods and decide which would work for finding the missing value. **Evaluate:** Be able to assess the value of the missing digit **Craft/write/create:** Be able to write own

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					shows and what conclusions can be drawn from it. **Craft/write/create :** Be able to collect own data, display it in a presented model and draw conclusions from what it shows.	equations with a missing value and explain how to solve it
	Assessment					

Year Group		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Y9	KS4 spiral thematic topic	*Numeracy 1* Non-calculator arithmetic Negative numbers BIDMAS Rounding & Estimation Using a calculator	*Algebra 1* Inverse operations Substitution Simplifying Expressions Expand single brackets Factorize single	*Algebra 2* Solving equations Sequences Linear graphs Gradients Quadratic, cubic, reciprocal graphs Real life graphs	*Geometry 1* Properties of shape Symmetry Area & Perimeter Circles 2D coordinates Plans & Elevations	*Geometry 2* Circles 2D coordinates Plans & Elevations Constructions & Loci	*Data 1* Frequency Diagrams Pie charts Two-way tables Averages Mean from grouped data Comparing two data

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		Percentages Growth & Decay Standard form	brackets		Constructions & Loci		sets Scatter diagrams
	Topic						
	Topic vocabulary						
	Disciplinary literacy link						
	SMSC/International dimension link to build cultural capital						
	Horizon Skills (Link to careers)						
	Knowledge and skills	Recap of core skills of number and use of calculators. Apply numeracy skills to multi-step questions. Realize applications to real world problems. Percentage movements for appreciation and depreciation.	Recap of core skills and terminology for algebraic problems. Extending possibilities of forming algebraic expressions and equations to aid solutions of complex problems.	Develop understanding of fluency through reasoning, justification of answers through estimation and substitution, evaluation and choice of mathematical methods	Recap core skills that allow mathematical methods to be applied to solve geometric problems. Develop key terminology for shape in order to describe and differentiate between types.	Recap core skills that allow mathematical methods to be applied to solve geometric problems. Develop key terminology for shape in order to describe and differentiate between types.	Develop understanding of statistical analysis to incorporate reasoning, undertaking of more complex calculations, comparisons to be made and supporting arguments to be given. Application of skills to a mini-project on student data. Giving

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		Including monetary and population changes.					students the opportunity to consolidate understanding through use.
	Assessment						

Year Group		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Y10	KS4 spiral thematic topic	*Numeracy 2* HCF & LCM Four rules of fractions Four rules of decimals Percentage conversions Laws of indices Symbols Ratio Direct & Inverse proportion Fraction to recurring decimal	*Geometry 2* Angle rules – incl. Parallel & polygons Transformations Bearings Pythagoras' theorem Trigonometry Exact trig ratios Recall & use standard formulae	*Geometry 3* Pythagoras' theorem Trigonometry Exact trig ratios Recall & use standard formulae	*Algebra 3* Forming and solving equations Functions Solving inequalities Rearranging formulae Simultaneous equations Expanding double brackets Factorising & solving quadratic equations Proofs Using kinematic	*Algebra 4* Expanding double brackets Factorising & solving quadratic equations Proofs Using kinematic formulae	*Data 2* Questionnaires & misleading graphs Venn diagrams & sets Probability scale & calculating probability Relative frequency Listing outcomes / sample spaces Tree diagrams Sampling

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					formulae		
	Topic						
	Topic vocabulary						
	Disciplinary literacy link						
	SMSC/International dimension link to build cultural capital						
	Horizon Skills (Link to careers)						
	Knowledge and skills	Revisit fundamental knowledge factors, multiples, and indices. Represent inequality statements mathematically Use ratio and proportion to evaluate and compare	Know and apply angle facts in parallel lines and polygons Transformation of 2D shapes Know and apply pythagoras and trigonometry with right angled triangles	Know and apply angle facts in parallel lines and polygons Transformation of 2D shapes Know and apply pythagoras and trigonometry with right angled triangles	Revisit and develop understanding of equations within algebra. Extend understanding within simultaneous equations Develop problem solving and reasoning through algebraic proofs	Revisit and develop understanding of equations within algebra. Extend understanding within simultaneous equations Develop problem solving and reasoning through algebraic proofs	Develop understanding of previous statistical skills learned within KS3. Introduce and develop GCSE level understanding of probability

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	Assessment						

Year Group		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Y11	KS4 spiral thematic topic	*Geometry 4* Metric unit conversion Compound measures Bounds Surface area and volume Similarity Congruence Vectors Recall & use standard formulae	*Mock Examinations* Areas of reteach	*Mock Examinations* Areas of reteach	*Walking Talking Mock Examinations*		
	Topic						
	Topic vocabulary						
	Disciplinary literacy link						
	SMSC/Inter						

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	national dimension link to build cultural capital						
	Horizon Skills (Link to careers)						
	Knowledge and skills	Lesson starters to recap core skills of numeracy, algebra, geometry and statistics Each class to develop skills based upon mock examination results. Gaps in knowledge to be identified, with lessons to improve and consolidate existing knowledge	Lesson starters to recap core skills of numeracy, algebra, geometry and statistics Ongoing topic review, with an emphasis on examination technique as part of targeting improved results for every student	Topic specific lessons to enhance knowledge as and when identified	Topic specific lessons to enhance knowledge as and when identified	To revise previous content from the GCSE specification identified from topic heatmaps in order to make sure final preparation of students is most impactful.	
	Assessment	Mock examinations as per whole school assessment calendar	Mock examinations as per whole school assessment calendar	Mock examinations as per whole school assessment calendar		GCSE examinations	