

Year 7 Autumn Half Term 1

Overarching topic: Number Sense, Place Value, Negative Numbers, Four Operations, Decimals, Rounding, Order of Operations (BIDMAS).	
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Why is this topic being studied at this time?	Students arrive from KS2 with varied experiences and levels of fluency. This unit establishes a common foundation in number skills that underpin all future work in algebra, geometry, probability and statistics. By securing place value, calculation methods and negative numbers early, students are better prepared for increasingly complex mathematical reasoning later in the year.
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How does it fit into the wider subject curriculum?	The ancient Greeks believed that "number rules the universe." Every area of mathematics relies on number sense. Scientists, engineers and computer programmers all depend on accurate calculation and understanding of place value. Even modern computers use number systems based on place value structures.
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	Essential	Core	Ambitious
The Big questions (what questions will students be able to answer with mastery of this topic?)			Why do mathematicians use powers and roots?
	What is place value?	How do we calculate efficiently using the four operations?	Can different calculation methods produce the same answer?
	What is a negative number?	How do we work with negative numbers?	How can estimation help us check answers?
	How do we read and compare numbers on a number line?	How do we calculate with decimals?	How do calculators apply BIDMAS automatically?
	How do we round whole numbers and decimals?	Why does order matter in calculations?	How can negative numbers be used in real-world situations such as temperature and finance?
	What do the four operations mean?	How does BIDMAS help us obtain the correct answer?	

The Key skills/techniques	The sophistication and application of skills will become more advanced as students' progress through the critical, core and pinnacle knowledge	
	Skill/technique	How will this skill be developed?
	Arithmetic fluency	Practise accurate use of the four operations with integers, decimals and negative numbers.
	Estimate answers and identify whether calculations are reasonable.	Error-analysis tasks, "spot the mistake" activities and estimation before calculator use.

Throughout year 7 and 8, alongside the content in the provision map here, students will embrace the statistics elements of the curriculum through a bespoke set of projects integrating the use of technology. This will help to develop their skills using Excel and other mathematical software while covering various aspects of data handling and data analysis.
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Year 7 Autumn Half Term 2

Overarching topic: Expressions, Algebraic Notation, Substitution, Formulae, Solving Equations.

Why is this topic being studied at this time?

Students now have secure number foundations and are ready to generalise mathematical relationships using algebra. Algebra introduces abstract thinking and develops reasoning skills that support future study of equations, graphs and functions.

How does it fit into the wider subject curriculum?

Algebra is often described as the language of mathematics. It allows scientists to create formulas, engineers to model structures and programmers to write algorithms. Every GCSE mathematics pathway depends heavily upon algebraic fluency.

	Essential	Core	Ambitious
The Big questions (what questions will students be able to answer with mastery of this topic?)	What is a variable?	How do we simplify expressions?	How can algebra represent real-world situations?
	Why do mathematicians use letters?	How do we substitute values into expressions?	How can we create our own formulae?
	What is an expression?	How do we use formulae?	Why do equations remain balanced?
	What is an equation?	How do we solve one-step equations?	How can algebra help us solve puzzles?
	What do common algebra symbols mean?	How do we solve equations involving more than one step?	How does algebra connect to computer programming?
The Key skills/techniques	The sophistication and application of skills will become more advanced as students' progress through the critical, core and pinnacle knowledge		
	Skill/technique	How will this skill be developed?	
	Use correct algebraic notation and vocabulary.	Structured explanations, verbal questioning and opportunities to describe methods using mathematical language	
	Recognise patterns and represent them algebraically.	Function machines, pattern-building activities and forming algebraic rules from sequences and contexts.	

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Year 7 Spring Half Term 1

Overarching topic: Line Properties, Symmetry, Perimeter, Area, Coordinates.

Why is this topic being studied at this time?

Students apply the numerical and algebraic skills developed in Autumn to geometrical contexts. This provides opportunities to use multiplication, addition and reasoning in practical situations involving shape and space.

How does it fit into the wider subject curriculum?

Architects, game designers and engineers use coordinate systems every day. The same coordinate principles used in Year 7 mathematics help determine locations on maps, computer screens and GPS systems.

	Essential	Core	Ambitious
		How do we calculate perimeter?	Why is area measured in square units?
The Big questions (what questions will students be able to answer with mastery of this topic?)	What is perimeter?	How do we calculate the area of rectangles?	How can coordinates solve geometrical problems?
	What is area?	How do we calculate the area of compound shapes?	How can shapes be transformed on a grid?
	What is symmetry?	How do we use coordinates to represent positions?	How do architects use area calculations?
	What are coordinates?	How do shape properties help us solve problems?	How can geometry and algebra work together?
	How do we describe lines?		
The Key skills/techniques	The sophistication and application of skills will become more advanced as students' progress through the critical, core and pinnacle knowledge		
	Skill/technique	How will this skill be developed?	
	Visualise and interpret shapes, positions and movements.	Coordinate investigations, practical drawing activities and geometry problem-solving tasks.	
	Select and perform calculations within geometrical contexts	Perimeter and area investigations, compound shape problems and real-life measurement scenarios.	

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Year 7 Spring Half Term 2

Overarching topic: Factors, Multiples, Prime Numbers, HCF, LCM, Fractions, Equivalence, Ordering, Addition and Subtraction of Fractions.	
Why is this topic being studied at this time?	Students have developed confidence with number and algebra and are now ready to deepen their understanding of number structure. Fractions build directly upon multiplication, division and factors, making this an ideal point in the sequence.
How does it fit into the wider subject curriculum?	Prime numbers fascinated mathematicians for thousands of years and are now used in internet encryption to keep information secure online. The mathematics of fractions also appears throughout science, engineering and probability.

	Essential	Core	Ambitious
The Big questions (what questions will students be able to answer with mastery of this topic?)	What is a factor?	How do we find HCF and LCM?	Why are prime numbers important?
	What is a multiple?	How do we simplify fractions?	How do fractions connect to ratios?
	What is a prime number?	How do we compare fractions?	How can fraction calculations be checked efficiently?
	What is a fraction?	How do we order fractions?	How are fractions used in probability?
	What makes fractions equivalent?	How do we add and subtract fractions?	How can prime factorisation help solve problems?

The Key skills/techniques	The sophistication and application of skills will become more advanced as students' progress through the critical, core and pinnacle knowledge	
	Skill/technique	How will this skill be developed?
	Identify relationships between numbers through factors, multiples and prime numbers.	Sorting tasks, number investigations and use of factor trees and Venn diagrams.
	Manipulate and compare fractions confidently.	Visual models, fraction walls, reasoning tasks and increasingly complex calculations.

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Year 7 Summer Half Term 1

Overarching topic: Brackets, Expanding and Factorising, Angles, Angle Facts, Proportion, Multiplying and Dividing Fractions, Fractions of Amounts.	
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Why is this topic being studied at this time?	Students combine ideas from algebra, geometry and fractions. This is an effective point to explore mathematical links between different topics and develop more sophisticated reasoning and problem-solving skills.
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How does it fit into the wider subject curriculum?	The angle facts students learn are the same principles used by surveyors, builders and pilots. Proportional reasoning is one of the most important mathematical skills because it underpins scaling, maps, recipes and financial mathematics.
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	Essential	Core	Ambitious
The Big questions (what questions will students be able to answer with mastery of this topic?)		How do we expand brackets?	Why do angle rules work?
	What is an angle?	How do we factorise expressions?	How are algebra and geometry connected?
	What are different types of angles?	How do we find unknown angles?	How can proportion be used to compare value?
	What does a bracket mean in algebra?	How do we solve proportion problems?	How do fractions, ratios and proportion relate?
	What is proportion?	How do we multiply and divide fractions?	How can algebraic methods solve geometrical problems?
	What is a reciprocal?		

The Key skills/techniques	The sophistication and application of skills will become more advanced as students' progress through the critical, core and pinnacle knowledge	
	Skill/technique	How will this skill be developed?
	Expand, simplify and factorise expressions.	Worked examples, deliberate practice and problems linking algebra to geometry.
	Use angle facts to justify solutions.	Explain-your-method activities, angle puzzles and reasoning-based investigations.

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Year 7 Summer Half Term 2

Overarching topic: Fractions, Decimals and Percentages, Probability, Sample Space Diagrams	
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Why is this topic being studied at this time?	This unit draws together many concepts studied throughout Year 7. Students use fractions, decimals and percentages to describe likelihood and analyse data, providing a natural capstone to the year.
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How does it fit into the wider subject curriculum?	Probability began with mathematicians studying games of chance. Today, probability is used in weather forecasting, sport analytics, medicine, artificial intelligence and insurance.
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	Essential	Core	Ambitious
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The Big questions (what questions will students be able to answer with mastery of this topic?)	What is probability? What does likely or unlikely mean? What are fractions, decimals and percentages?	How do we calculate probabilities? How do we use sample space diagrams? How do we convert between fractions, decimals and percentages?	How can probability help us make predictions? Why do probabilities add to one?
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The Key skills/techniques	The sophistication and application of skills will become more advanced as students' progress through the critical, core and pinnacle knowledge	
	Skill/technique	How will this skill be developed?
	Describe and calculate likelihood using appropriate representations.	Experiments, sample space investigations, simulations and contextual probability problems.

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