Year 7
Learning map

Autumn	**Algebraic thinking**			**Place value and Proportion**		
	Sequences	Understand and use algebraic notation	Equality and equivalence	Place value and ordering integers and decimals	Fraction, decimal and percentage equivalence	
Spring	**Applications of number**			**Directed number**	**Fractional thinking**	
	Solving problems with addition and subtraction	Solving problems with multiplication and division	Fractions and percentages of amounts	Operations and equations with directed number	Addition and subtraction of fractions	
Summer	**Lines and angles**			**Reasoning with number**		
	Constructing, measuring and using geometric notation	Developing geometric reasoning		Developing number sense	Sets and probability	Prime numbers and proof

Year 7 Autumn 1 Learning map
Algebraic thinking

Sequences	Understand and use algebraic notation	Equality and equivalence
• Describe and continue a sequence given diagrammatically • Predict and check the next terms in a sequence • Represent a sequence in a tabular and graphical forms • Recognise the different between liner and non-linear sequences • Continue numerical linear and non linear sequences • Explain the term to term rule of numerical sequences in words	• Given a numerical input, find the output of a single function machine • Use inverse operations to find the input given the output • Use diagrams and letters to generalise number operations including single function machines • Find the function machine given a simple expression • Substitute values into single operation expressions • Find numerical inputs and outputs for a series of two function machines • Use diagrams and letters with a series of two function machines • Find the function machine given a two-step expression • Substitute values into two-step expressions • Generate sequences given algebraic rule • Represent one and two-step functions graphically.	• Understand the meaning of equality • Understand and use fact families, numerically and algebraically • Solve one-step linear equations, involving the four operations, using inverse operations • Understand the meaning of like and unlike terms • Understand the meaning of equivalence • Simplify algebraic expressions by collecting like terms using the ≡ symbol
• Find the missing numbers in a sequence		

Year 7 Autumn 2 Learning map
Place Value and Proportion

Place Value		FDP Equivalence
• Recognise the place value of any number in an integer up to one billion • Understand and write integers up to one billion in words and figures • Work out intervals on a number line • Position integers on a number line • Round integers to the nearest power of ten • Compare two numbers using =, ≠, <, >, ≤, ≥ • Compare and order any number up to one billion • Find the range and median of a set of numbers • Understand place value for decimals • Position decimals on a number line • Round a number to one significant figure		• Represent tenths and hundredths as diagrams and on a number line • Interchange between fractional and decimal number lines • Convert between fractions and decimals – tenths, hundredths, fifths and quarters • Understand the meaning of percentage using a hundred square. • Convert fluently between simple fractions, decimals and percentages • Use and interpret pie charts • Represent any fraction as a diagram and on a number line • Identify and use simple equivalent fractions • Understand fractions as division • Convert fluently between fractions, decimals and percentages
• Write 10, 100, 1000 etc.. As powers of ten • Write positive integers in the form A x 10^n • Investigate negative powers of ten • Write decimals in the form A x 10^n		• Convert between fractions and decimals – eighths and thousandths • Explore fractions above one, decimals and percentages

Year 7 Spring 1 Learning map
Application of Number

Addition and Subtraction	Multiplication and Division	Fraction & Percentage of Amounts
• Properties of addition and subtraction • Mental strategies for addition and subtraction • Use formal methods of addition and subtraction of integers and decimals • Choose the most appropriate method: mental, formal or calculator • Solve problems in the context of perimeter • Solve financial maths problems • Solve problems involving tales and timetables • Solve problems with frequency trees • Solve problems with bar charts and line charts	• Properties of multiplication and division • Understand and use factors and multiples • Multiply and divide integers and decimals by powers of ten • Convert metric units • Use formal methods of multiplying and dividing integers and decimals • Understand and use order of operations • Solve problems using area of rectangles, parallelograms and triangles • Solve problems using the mean	• Find a fraction of a given amount • Use a given fraction to find the whole and/or other fractions • Find a percentage of a given amount using mental methods • Find a percentage of an amount using a calculator
• Add and subtract numbers given in standard form.	• Multiply by 0.1 and 0.01 • Solve problems using the area of trapezia • Explore multiplication and division in algebraic expressions	• Solve problems with fractions greater than 1 and percentages greater than 100%

Year 7 Spring 2 Learning map
Directed Numbers and Fractional Thinking

Directed Number		Fractional Thinking	
• Understand and use representation of directed numbers • Order directed numbers using lines and appropriate symbols • Perform calculations that cross zero • Add directed numbers • Multiplication and division of directed numbers • Use a calculator for directed number calculations • Evaluate algebraic expressions with directed numbers • Introduce and solve two-step equations • Use order of operations with directed numbers		• Understand representation of fractions • Convert between mixed numbers and fractions • Add and subtract fractions with the same denominator • Add and subtract fractions from integers expressing the answer as a single fraction • Understand and use equivalent fractions • Add and subtract fractions where the denominators share a simple common multiple • Add and subtract fractions with any denominator • Add and subtract fractions and mixed numbers • Use fractions in algebraic contexts • Use equivalence to add and subtract decimals and fractions	
• Understand that positive numbers have more than one square root • Explore higher powers and roots		• Add and subtract simple algebraic fractions	

Year 7 Summer 1 Learning map
Lines and Angles

Construction and Measuring		Geometric Reasoning	
• Understand and use letters and labelling conventions including those for geometric figures • Draw and measure line segments including geometric figures • Understand angles as a measure of turn • Classify angles • Measure and draw angles up to 360° • Identify perpendicular and parallel lines • Recognising types of triangles and quadrilaterals		• Understand and use the sum of angles at a point • Understand and use the sum of angles on a straight line • Understand and use the equality of vertically opposite angles • Know and apply the sum of angles in a triangle • Know and apply the sum of angles in a quadrilateral • Solve angle problems using properties of triangles and quadrilaterals • Solve complex angle problems	
• Identify polygons up to a decagon • Construct triangles using SSS, SAS and ASA • Construct more complex polygons • Interpret simple pie charts using proportion • Interpret pie charts using a protractor • Draw a pie chart		• Find and use the angle sum of any polygon • Investigate angles in parallel lines • Understand and use parallel line angle rules • Use known facts to obtain simple proofs.	

Year 7 Summer 2 Learning map
Reasoning with Number

Developing Number Sense	Sets and Probability	Prime Numbers and Proof
• Know and use mental arithmetic strategies for integers and decimals • Know and use mental arithmetic strategies for fractions • Use factors to simplify calculations • Use estimation as a method for checking mental calculations • Use known number facts to derive other facts • Use known algebraic facts to derive other facts • Know when to use mental strategies, formal written method or a calculator	• Identify and represent sets • Interpret and create Venn diagrams • Understand and use the intersection and union of sets • Know and use the vocabulary of probability • Generate sample spaces for single events • Calculate the probability of a single event • Understand and use the probability scale • Know that the sum of probabilities of all possible outcomes is 1	• Find the use of multiples • Identify factors of a number and expressions • Recognise and identify prime numbers, square and triangular numbers • Find common factors of a set of numbers including HCF • Find common multiples of a set of numbers including LCM • Write a number as a product of its prime factors • Make and test conjectures • Use counterexamples to disprove a conjecture
	• Understand and use the complement of a set	• Use a Venn diagram to calculate the HCF and LCM