Year 7

Mathematics Curriculum Overview

Autumn 1

Topic	Big Questions
Place Value, Ordering Integers and Decimals	How can we recognise place value, write, compare and order integers up to a billion? What do we understand about place value for decimals and how do we position decimals on a number line? How do we represent and order directed numbers? How can we use a number line to round integers to the nearest power of ten? How do we round a number to 1 significant figure?
Multiplying and Dividing by Powers of 10	How do we multiply and divide integers and decimals by powers of 10? What skills do we use to convert metric units? How do we write 10, 100, 1000 as powers of 10 and write positive integers in standard form? What can we discover if we investigate negative powers of ten and how do we write decimals in standard form?
Solving problems with addition and subtraction	How do we use formal methods for addition and subtraction? How do we add and subtract using directed numbers? How do we add and subtract numbers given in standard form?
Solving problems with multiplication	What do we understand about factors, multiples and primes? What is the HCF and LCM and how do we calculate them by listing? How do we use formal methods to multiply integers and decimals? How do we multiply using directed numbers?

	What is the difference between a square and cube number, and their associated roots? What do we understand about indices and how can apply this to multiply numbers in standard form?

Autumn 2

Topic	Big Questions
Solving problems with division	How do we use formal methods to divide integers? How do we use formal methods to divide decimals? How do we divide using directed numbers? What do we understand about indices and how can apply this to divide numbers in standard form? How do we understand and use order of operations?
Understanding and using algebraic notation	What is the difference between a term, expression, equation, formula and identity? How do you write algebraically? How can we use like and unlike terms to simplify algebraic expressions by collecting like terms?
Application of the four operations	How do we solve contextual problems involving perimeter? How do we solve financial contextual problems? What is the difference between the mode, median, mean and the range? How do you calculate the median of a listed set of data? How do you calculate the mean of a listed set of data? How do you find and interpret the range? How do you represent listed data using tally charts and frequency tables? How can we calculate averages from frequency tables?

Spring 1

Topic	Big Questions
Calculating with Fractions	What do we understand about equivalent fractions, and how do we use this to order fractions?
	What method do we use to add and subtract fractions?
	How do we convert between mixed numbers and fractions (and order)?
	How do we add and subtract with improper fractions and mixed numbers?
	How do we find a fraction of a given amount?
	How do you multiply two or more fractions?
	What methods do we use to divide by fractions?
	How do we simplify basic algebraic fractions?
Substitution	How do we use function machines to find numeric inputs and outputs?
	How do we form expressions using function machines?
	How do we substitute into single or two-step operation expressions (including decimals, fractions and negatives)?
	What is basic function notation, and how do we substitute into functions?
Area of 2D Shapes	How do you calculate the area of squares, rectangles, parallelograms and triangles?
	What methods can we use to calculate the area of rectilinear compound shapes?
	How do you calculate the area of trapezia?
	How do we solve contextual problems involving area?
Constructing, measuring and using geometric notation	How do we use letter and labelling conventions including those for geometric figures to understand and draw these?
	How can we describe angles as a measure of turn and classify angles?

	How do we measure and draw angles up to 360°?
	How can we recognise and identify types of triangles, quadrilateral and other polygons?
	How do you construct a perpendicular and angle bisector?
	What methods can we use to construct triangles using SSS, SAS and ASA?

Spring 2

Topic	Big Questions
Solving Equations	How do we solve one-step linear equations involving +/- using inverse operations?
	How do we solve one-step linear equations involving x/÷ using inverse operations?
	How do we solve two-step linear equations?
	How can we use equations to solve contextual problems?
FDP Equivalence	How do we convert between fractions and decimals?
	How do we use equivalence to add and subtract decimals and fractions?
	How do we convert between fractions and percentages?
	How do we convert between percentages and decimals?
	How do we use equivalence to order fractions, decimals and percentages?
Percentages	How can we find a percentage of a given amount?
	How can we increase and decrease an amount by a given percentage?
	What is the multiplier method for finding percentages of amounts?
	How can we use the multiplier method to find percentage increase and decreases?
	How do we solve contextual problems involving FDP?

Summer 1

Topic	Big Questions
Developing geometric reasoning	How do we show that we understand and use the sum of angles at a point, on a straight line and that are vertically opposite? How can we apply the sum of angles in a triangle to solve angle problems? How can we use properties of quadrilaterals to solve angle problems? How do we find and use the angle sum of any polygon?
Ratio	How do we show an understanding of the meaning and representation of ratio and use ratio notation? How do we express ratios in their simplest integer form and in the form 1 : n? How do we divide into a given ratio?
Sequences	How do you describe and continue sequences and use them to predict and check the next terms? How can we represent sequences diagrammatically and find the next terms? What do we need to do differently when continuing non-linear sequences? What is meant by the 'term-to-term rule'? How can we generate sequences using a description?

Summer 2

Topic	Big Questions
Coordinates and Graphs	How can we work with coordinates in all four quadrants to identify and draw lines that are parallel to the axes? What should we look for to recognise and use the line y=x and y=kx?

	What should we look for to recognise and use lines of the form y=x+a, y=-kx, y=a-x and x+y=a ?
	How do we plot graphs of the form y=mx+c?
Transformations: Reflection, Rotation and Translation	How do we plot graphs of the form y=mx+c?
	What do we recognise from line symmetry?
	How do we reflect a shape in a horizontal or vertical line?
	How do we reflect a shape in a diagonal line?
	How do we translate points and shapes by a given vector?
	How do we rotate a shape around a given point?
Interpreting and displaying data	How can we interpret and construct bar charts?
	How do we interpret and construct pictograms?
	How can we interpret pie charts using proportion and a protractor?
	How do we use angles to draw pie charts?
	How can we use the averages and range to compare represented data sets?
Probability	What do we know about the vocabulary of probability?
	What do we understand about the probability scale and how do we show probabilities sum to 1?
	How do we generate sample spaces for single events and calculate probabilities?
	How do we identify and represent sets and construct a Venn diagram?
	What do we understand about the intersection and union of sets?