



Academic Overview 2018-19

Maths						
	Term 1.1	Term 1.2	Term 2.1	Term 2.2	Term 3.1	Term 3.1
Year 7	Place Value Calculations	Decimal Calculations Directed Numbers Units	Properties of 2D Shapes Areas	Types of Numbers Sequences Language of Algebra	Angles Fractions	Reading and Interpreting Tables and Graphs Percentages Medians Perimeters
Year 8	Estimation Ratio and Proportion Fractions Percentage Change	Angles Equations and Formulae	Probability Area	Mean and Comparing Data Coordinates Sequences	Transformations Constructions and Bearings	Plotting Linear Graphs Conversion Graphs Plans, Nets and Elevations
Year 9	Number Properties Rounding & Estimation FDP Fractions	Ratio Percentages 2D & 3D Shapes Angle Properties Angles & Polygons	Algebraic Expressions Algebraic Formulae Linear Equations Inequalities	Units of Measurements Perimeter & Area Populations and Samples Summary Statistics and Outliers	Coordinates and Functions Straight Line Graphs Pythagoras' Theorem Maps and Scale	Transformations 3D shapes Real life graphs
Year 10	Powers, roots & indices Standard Form Circumference & Area of a circle Surface Area & Volume of 3D shapes	Constructions and Loci Compound Measures Statistical Charts and Graphs	Exact form and Surds Trigonometry Sequences	Quadratic Equations Bounds Congruency and Similarity Graphs for grouped data (H)	Probability Manipulating Formulae Areas Under Graphs (H) Coordinates and Graphs (F)	Simultaneous Equations Circle Theorems (H) Equation of a circle (H) Angles (F) Areas (F) Solving Equations (F)
Year 11	Surface Area & Volume of complex shapes Proportion Polynomials & Functions Pythagoras and Trigonometry (F) Trigonometry in non-right- angled triangles	Transforming Functions (H) Vectors (H) Algebraic Fractions (H) Iteration (H) Fractions (F) Symmetry and Transformations	Revision	Revision		



Year 9 Curriculum Content Overview 2017-18

Maths Year 9 (Foundation) Autumn Term 1				
Knowledge and Skills Students will be taught to....	Reading, Oracy, Literacy and Numeracy	Formative Assessment	Summative Assessment	Linked to
<ul style="list-style-type: none"> • Understand and differentiate between the different types of number and know key examples. • Understand and use place value. • Use non-calculator methods to calculate the sum, difference, product and quotient of positive and negative whole numbers. • Express a number as a product of its primes. • Find the HCF and LCM of two whole numbers . • Use BIDMAS. • Add, subtract and multiply decimals including negative decimals, without a calculator. • Divide a decimal by a whole number, including negative decimals, without a calculator. • Round numbers to decimals places and significant figures • Estimate calculations • Use equivalent fractions • Write a simple fractions as a terminating decimal • Convert and order fractions, decimals and percentages • Calculate fraction of a quantity • Carry out fours operations with fractions • Find the ratio of quantities • Split quantities into two and three parts • Calculate one quantity from another given the ratio of two quantities. 	<p>Reading</p> <ul style="list-style-type: none"> • Reading for meaning on problem solving questions. • Identifying the maths from a written question 	<p>Questioning in lessons</p> <p>Whole class feedback during lessons</p> <p>Topic check-ins</p> <p>Individual questioning in lessons</p> <p>Individual verbal feedback in lessons</p>	<p>5 assessments throughout the academic year</p> <p>Topic check-ins</p>	<p>Factorising algebraic expressions.</p> <p>Bounds and measure.</p> <p>Finding percentages.</p> <p>Compund Interest.</p> <p>Proportionality rules.</p> <p>Rates of change.</p>
	<p>Oracy and Literacy</p> <ul style="list-style-type: none"> • Key words and definitions • Explaining reasoning and methodology when solving mathematical problems 			



Assessment Skills, Knowledge and Concepts Map

Maths Year 9 (Foundation) Autumn Term 1

Key Learning Questions	Number Properties	Reading
<p>Find the sum/product/difference/quotient of...</p> <p>Find the HCF and LCM of...</p>	<ul style="list-style-type: none"> • Use non-calculator methods to calculate the sum, difference, product and quotient of positive and negative whole numbers. • Identify prime numbers less than 20. • Express a whole number as a product of its prime factors. • Find the HCF and LCM of two whole numbers by listing. • Use the order of operations correctly • Add, subtract and multiply decimals including negative decimals, without a calculator. • Divide a decimal by a whole number, including negative decimals, without a calculator. 	<ul style="list-style-type: none"> • Reading for meaning on problem solving questions. • Identifying the maths from a written question
	Rounding & Estimating	Oracy and Literacy
<p>Round ##### to the nearest 10, 100, 1000</p> <p>Round ##.### to the nearest 10th, 100th, 1000th</p> <p>Round ##.### to 1, 2 or 3 decimal places/significant figures</p>	<ul style="list-style-type: none"> • Round numbers to the nearest whole number, ten, hundred, etc or to a given number of significant figures (sf) or decimal places (dp). • Estimate or check, without a calculator, the result of a calculation by using suitable approximations. 	<p>Literacy</p> <p>Even, odd, prime, factor, multiple, product, sum, quotient, divisor, index, reciprocal, round, significant, negative, cube, root</p>
	FDP	Oracy
<p>Give 3 equivalent fraction to $\frac{3}{4}$</p> <p>Order $\frac{3}{4}$, 0.8 and 70%</p> <p>Give $\frac{2}{5}$ as a decimal</p>	<ul style="list-style-type: none"> • Recognise and use equivalence between simple fractions and mixed numbers. • Express a simple fraction as a terminating decimal or vice versa, without a calculator. • Convert between and order fractions, decimals and percentages. 	<p>Explaining reasoning and methodology when solving mathematical problems</p>
	Ratio	
<p>Split £2.50 in the ratio 2 : 3</p> <p>If Bill and Ted share money in the ratio 2:5, and Bill gets £20, how much does Ted get?</p> <p>Using recipes to increase/decrease ingredients</p>	<ul style="list-style-type: none"> • Find unit ratios and the ratio of quantities in the form a : b and simplify. • Split a quantity into two parts given the ratio of the parts. • Interpret a ratio of two parts as a fraction. • Solve simple ratio and proportion problems. • Understand the relationship between ratio and linear functions. • Calculate one quantity from another, given the ratio of the two quantities. 	



Year 9 Curriculum Content Overview 2017-18

Maths Year 9 (Foundation) Autumn Term 2				
Knowledge and Skills Students will be taught to....	Reading, Oracy, Literacy and Numeracy	Formative Assessment	Summative Assessment	Link to
<ul style="list-style-type: none"> Understand percentage is 'number of parts per hundred'. Calculate a percentage of a quantity, and express one quantity as a percentage of another, with or without a calculator. Increase or decrease a quantity by a simple percentage, including simple decimal or fractional multipliers. Apply this to simple original value problems and simple interest. Use correct terminology throughout Use a compass, ruler and protractor correctly Know the basic properties of triangles. Know the basic properties of quadrilaterals Know angle definitions Use angle notation correctly Know and use all basic angle laws, including those on parallel lines Know and use angle laws within a triangle and quadrilateral Derive and use the sum of interior and exterior angles Derive the sum of interior angles of a regular polygon 	<p>Reading</p> <ul style="list-style-type: none"> Reading for meaning on problem solving questions. Identifying the maths from a written question <hr/> <p>Oracy and Literacy</p> <ul style="list-style-type: none"> Key words and definitions Explaining reasoning and methodology when solving mathematical problems 	<p>Questioning in lessons</p> <p>Whole class feedback during lessons</p> <p>Topic check-ins</p> <p>Individual questioning in lessons</p> <p>Individual verbal feedback in lessons</p>	<p>5 assessments throughout the academic year</p> <p>Topic check-ins</p>	<p>Compound interest and percentage change.</p> <p>Area and Perimeter</p> <p>Angles</p> <p>2D and 3D shapes</p> <p>Fractions, decimals and percentages</p>



Assessment Skills, Knowledge and Concepts Map

Maths Year 9 (Foundation) Autumn Term 2		
Key Learning Questions	Percentages	Reading
Find 1%, 5%, 10%, 25%, 50% Find 63%, 18% What is 34 as a percent of 50? Increase 50 by 15% What are the different multipliers?	<ul style="list-style-type: none"> • Calculate a percentage of a quantity, and express one quantity as a percentage of another, with or without a calculator. • Increase or decrease a quantity by a simple percentage, including simple decimal or fractional multipliers. • Apply this to simple original value problems and simple interest. 	<ul style="list-style-type: none"> • Reading for meaning on problem solving questions. • Identifying the maths from a written question
	2D & 3D Shapes	Oracy and Literacy
How many vertices, edges and faces does a square based pyramid have? Which quadrilaterals have two pairs of parallel sides? What is the name of a 10 sided polygon?	<ul style="list-style-type: none"> • Use the terms points, lines, line segments, vertices, edges, planes, parallel lines, perpendicular lines. • Use a ruler, protractor and compass • Know the basic properties of isosceles, equilateral and right- angled triangles. • Give geometrical reasons to justify these properties. • Know the basic properties of the square, rectangle, parallelogram, trapezium, kite and rhombus. • Give geometrical reasons to justify these properties. • Name common polygons 	Oracy <ul style="list-style-type: none"> • Explaining reasoning and methodology when solving mathematical problems Literacy <ul style="list-style-type: none"> • Vertex, segment, corresponding, alternate, interior, exterior, percent, increase, decrease, unit, parallel, perpendicular, quadrilateral, adjacent, equal, right angle, geometric, property, proof, regular
	Angle Properties	
Draw a diagram to show a pair of corresponding angles? Explain what co-interior angles are.	<ul style="list-style-type: none"> • Know the terms acute, obtuse, right and reflex angles. • Use the standard conventions for labelling and referring to the sides and angles of triangles. e.g. AB, $\angle ABC$, angle ABC, a is the side opposite angle A • Know and use the sum of the angles at a point is 360°. • Know that the sum of the angles at a point on a line is 180°. • Know and use angles on parallel line laws. 	
	Angles in Polygons	
What is the interior angles sum of a hexagon? What is each exterior angle in a regular pentagon?	<ul style="list-style-type: none"> • Know and use the sum of the exterior angles of a polygon is 360°. • Find the sum of the interior angles of a polygon and use this to find the interior angle of a regular polygon. 	



Year 9 Curriculum Content Overview 2017-18

Maths Year 9 (Foundation) SpringTerm 1				
Knowledge and Skills Students will be taught to....	Reading, Oracy, Literacy and Numeracy	Formative Assessment	Summative Assessment	Link to
<ul style="list-style-type: none"> •Understand and use the concepts and vocabulary of expressions, equations, formulae, inequalities, terms and factors. •Simplify algebraic expressions by collecting like terms. •Simplify algebraic expressions by multiplying a single term over a bracket. •Take out common factors. •Formulate simple formulae and expressions from real-world contexts. e.g. Cost of car hire at £50 per day plus 10p per mile or the perimeter of a rectangle when the length is 2 cm more than the width. •Substitute positive or negative numbers into more complex formulae, including powers, roots and algebraic fractions. •Solve linear equations in one unknown algebraically. •Understand and use $<$, $>$, \leq, \geq, $=$, \neq 	<p>Reading</p> <ul style="list-style-type: none"> • Reading for meaning on problem solving questions. • Identifying the maths from a written question <hr/> <p>Oracy and Literacy</p> <ul style="list-style-type: none"> • Key words and definitions • Explaining reasoning and methodology when solving mathematical problems 	<p>Questioning in lessons</p> <p>Whole class feedback during lessons</p> <p>Topic check-ins</p> <p>Individual questioning in lessons</p> <p>Individual verbal feedback in lessons</p>	<p>5 assessments throughout the academic year</p> <p>Topic check-ins</p>	<p>Number properties</p> <p>Quadratics</p> <p>Perimeter & area</p> <p>Quadratic Equations</p>



Assessment Skills, Knowledge and Concepts Map

Maths Year 9 (Foundation) SpringTerm 1		
Key Learning Questions	Algebraic Expressions	Reading
Simplify $3a + 4b - 5a + 6b$ Expand $4(3a + 5)$ Expand $4a(5a+8b)$ Factorise $12a^2 + 3a$	<ul style="list-style-type: none"> Understand and use the concepts and vocabulary of expressions, equations, formulae, inequalities, terms and factors. Simplify algebraic expressions by collecting like terms. Simplify algebraic expressions by multiplying a single term over a bracket. Take out common factors. Recognise the difference between an equation and an identity, and show algebraic expressions are equivalent. Use algebra to construct arguments 	<ul style="list-style-type: none"> Reading for meaning on problem solving questions. Identifying the maths from a written question
	Algebraic Formulae	Oracy and Literacy
Given that $v = u + at$, find v when $t = 1$, $a = 2$ and $u = 7$. Cost of car hire at £50 per day plus 10p per mile or the perimeter of a rectangle when the length is 2 cm more than the width.	<ul style="list-style-type: none"> Substitute positive numbers into simple expressions and formulae to find the value of the subject. Formulate simple formulae and expressions from real-world contexts. Substitute positive or negative numbers into more complex formulae, including powers, roots and algebraic fractions. 	Oracy <ul style="list-style-type: none"> Explaining reasoning and methodology when solving mathematical problems Literacy Expression, equations, formula, coefficient, term, sum, product, difference, constant, substitute, factor, factorise, expand, index, power, identity, evaluate, integer
	Linear Equations	
Solve $3x + 6 = 15$ Solve $6x - 9 = 3x + 12$ The perimeter of a rectangle is 30, if it's width is 4 more than the double the length, what is the length?	<ul style="list-style-type: none"> Solve linear equations in one unknown algebraically. Set up and solve linear equations in mathematical and non-mathematical contexts, including those with the unknown on both sides of the equation. Interpret solutions in context. 	
	Inequalities	
List the integers which satisfy $-1 \leq x < 5$	<ul style="list-style-type: none"> Understand and use $<$, $>$, \leq, \geq, $=$, \neq Solve linear inequalities in one variable, expressing solutions on a number line using the conventional notation. 	



Year 9 Curriculum Content Overview 2017-18

Maths Year 9 (Foundation) Spring Term 2				
Knowledge and Skills Students will be taught to....	Reading, Oracy, Literacy and Numeracy	Formative Assessment	Summative Assessment	Link to
<ul style="list-style-type: none"> •Use and convert standard units of measurement for length, area, volume/capacity, mass, time and money. •Calculate the perimeter of rectilinear shapes. •Know and apply the formula for area of a parallelogram. •Know and apply the formula for area of a triangle. •Calculate the area of a trapezium. •Apply perimeter formulae in calculations involving the perimeter of composite 2D shapes. •Apply area formulae in calculations involving the area of composite 2D shapes. •Define the population in a study, and understand the difference between population and sample. <ul style="list-style-type: none"> •Infer properties of populations or distributions from a sample. •Understand what is meant by simple random sampling, and bias in sampling. •Calculate the mean, mode, median and range for ungrouped data. •Find the modal class, and calculate estimates of the range, mean and median for grouped data, and understand why they are estimates. •Describe a population using statistics. •Make simple comparisons. Compare data sets using 'like for like' summary values. •Understand the advantages and disadvantages of summary values. •Identify an outlier in simple cases. 	<p>Reading</p> <ul style="list-style-type: none"> • Reading for meaning on problem solving questions. • Identifying the maths from a written question 	<p>Questioning in lessons</p> <p>Whole class feedback during lessons</p> <p>Topic check-ins</p> <p>Individual questioning in lessons</p> <p>Individual verbal feedback in lessons</p>	<p>5 assessments throughout the academic year</p> <p>Topic check-ins</p>	<p>Volume</p> <p>Surface area and 3D shapes</p> <p>Scatter Graphs</p>



Assessment Skills, Knowledge and Concepts Map

Maths Year 9 (Foundation) Spring Term 2		
Key Learning Questions	Units of Measure	Reading
Write 300m in km Convert 100m ² to cm ²	<ul style="list-style-type: none"> •Use and convert standard units of measurement for length, area, volume/capacity, mass, time and money. •Use and convert standard units in algebraic contexts. 	<ul style="list-style-type: none"> • Reading for meaning on problem solving questions. • Identifying the maths from a written question
	Perimeter & Area	Oracy and Literacy
What is the formula to work out the area of a trapezium, triangle and a parallelogram?	<ul style="list-style-type: none"> •Calculate the perimeter of rectilinear shapes. •Know and apply the formula for area of a parallelogram. •Know and apply the formula for area of a triangle. •Calculate the area of a trapezium. •Apply perimeter formulae in calculations involving the perimeter of composite 2D shapes. •Apply area formulae in calculations involving the area of composite 2D shapes. 	<p>Oracy</p> <ul style="list-style-type: none"> • Explaining reasoning and methodology when solving mathematical problems <p>Literacy</p> <ul style="list-style-type: none"> • Mass, unit, area, volume, capacity, conversion, length, width, height, mean, mode, median, measure of spread, central tendency, estimate, frequency, data, outlier
	Populations and Samples	
Explain the difference between a population and a sample.	<ul style="list-style-type: none"> •Define the population in a study and understand the difference between population and sample. •Infer properties of populations or distributions from a sample. 	
	Summary Statistics and Outliers	
Find the mode, median and mean of 1,3,5,3,2,4,7,8,11,12,13. State the advantages and disadvantages of each of the types of average.	<ul style="list-style-type: none"> •Calculate the mean, mode, median and range for ungrouped data. •Find the modal class, and calculate estimates of the range, mean and median for grouped data, and understand why they are estimates. •Describe a population using statistics. •Make simple comparisons. Compare data sets using 'like for like' summary values. •Understand the advantages and disadvantages of summary values. •Identify an outlier in simple cases. •Appreciate there may be errors in data from values (outliers) that do not 'fit' 	



Year 9 Curriculum Content Overview 2017-18

Maths Year 9 (Foundation) Summer Term 1				
Knowledge and Skills Students will be taught to....	Reading, Oracy, Literacy and Numeracy	Formative Assessment	Summative Assessment	Link to
<ul style="list-style-type: none"> •Work with x- and y- coordinates in all four quadrants. •Interpret, where appropriate, simple expressions as functions with inputs and outputs. •Use a table of values to plot graphs of linear •Find and interpret the gradient and intercept of straight lines, graphically and using $y = mx + c$. •Understand the relationship between gradient and ratio. •Use a graph to find the approximate solution of a linear equation. •Know, derive and apply Pythagoras' theorem to find lengths in right-angled triangles in 2D figures. •Use the scale of a map, and work with bearings. •Construct and interpret scale drawings. 	<p>Reading</p> <ul style="list-style-type: none"> • Reading for meaning on problem solving questions. • Identifying the maths from a written question 	<p>Questioning in lessons</p> <p>Whole class feedback during lessons</p> <p>Topic check-ins</p> <p>Individual questioning in lessons</p> <p>Individual verbal feedback in lessons</p>	<p>5 assessments throughout the academic year</p> <p>Topic check-ins</p>	<p>Plotting quadratics, Simultaneous equations, Trigonometry</p>



Assessment Skills, Knowledge and Concepts Map

Maths Year 9 (Foundation) Summer Term 1		
Key Learning Questions	Coordinates & Functions	Reading
Explain how to plot a coordinate on a set of axes	<ul style="list-style-type: none"> • Work with x- and y- coordinates in all four quadrants. • Interpret, where appropriate, simple expressions as functions with inputs and outputs. 	<ul style="list-style-type: none"> • Reading for meaning on problem solving questions. • Identifying the maths from a written question
	Straight Line Graphs	Oracy and Literacy
Plot the graph of $y = 2x + 3$ Sketch the graph of $y = 2x + 3$ Find the equation of the line which connects (1,5) and (5,8) Find the equation of the line parallel to $y = 2x + 3$ passing through (4,15)	<ul style="list-style-type: none"> • Use a table of values to plot graphs of linear • Find and interpret the gradient and intercept of straight lines, graphically and using $y = mx + c$. • Understand the relationship between gradient and ratio. • Use a graph to find the approximate solution of a linear equation. • Use the form $y = mx + c$ to find and sketch equations of straight lines • Find the equation of a line through two given points, or through one point with a given gradient. • Identify and find equations of parallel lines. 	Oracy <ul style="list-style-type: none"> • Explaining reasoning and methodology when solving mathematical problems Literacy <ul style="list-style-type: none"> • Unit, scale, axes, vertical, horizontal, hypotenuse, coordinate, input, output, function, substitute, evaluate, round, parallel, perpendicular, gradient, ratio, solution, equation, theorem
	Pythagoras' Theorem	
Explain in words what Pythagoras' Theorem tells us.	<ul style="list-style-type: none"> • Know, derive and apply Pythagoras' theorem to find lengths in right-angled triangles in 2D figures. 	
	Maps and Scale	
Explain the three rules needed so that we can work with bearings.	<ul style="list-style-type: none"> • Use the scale of a map, and work with bearings. • Construct and interpret scale drawings. 	



Year 9 Curriculum Content Overview 2017-18

Maths Year 9 (Foundation) Summer Term 2				
Knowledge and Skills Students will be taught to....	Reading, Oracy, Literacy and Numeracy	Formative Assessment	Summative Assessment	Link to
<ul style="list-style-type: none"> •Identify reflection and rotation symmetries of triangles, quadrilaterals and other polygons. •Reflect a simple shape in a given mirror line, and identify the mirror line from a shape and its image. •Rotate a simple shape clockwise or anti-clockwise through a multiple of 90° about a given centre of rotation. •Use a column vector to describe a translation of a simple shape, and perform a specified translation. •Enlarge a simple shape from a given centre using a whole number scale factor, and identify the scale factor of an enlargement. •Recognise the terms face, surface, edge, and vertex, cube, cuboid, prism, cylinder, pyramid, cone and sphere. •Recognise and know the properties of the cube, cuboid, prism, cylinder, pyramid, cone and sphere. •Interpret plans and elevations of simple 3D solids. •Construct and interpret graphs in real-world contexts. 	<p>Reading</p> <ul style="list-style-type: none"> • Reading for meaning on problem solving questions. • Identifying the maths from a written question 	<p>Questioning in lessons</p> <p>Whole class feedback during lessons</p> <p>Topic check-ins</p> <p>Individual questioning in lessons</p> <p>Individual verbal feedback in lessons</p>	<p>5 assessments throughout the academic year</p> <p>Topic check-ins</p>	<p>Similarity and Congruence, 2D shapes,</p>



Assessment Skills, Knowledge and Concepts Map

Maths Year 9 (Foundation) Summer Term 2		
Key Learning Questions	Transformations	Reading
<p>Name the four different types of transformations and how they alter each shape.</p> <p>Which transformations produce congruent shapes?</p>	<ul style="list-style-type: none"> • Identify reflection and rotational symmetries of polygons. • Reflect a simple shape in a given mirror line and identify the mirror line from a shape and its image. • Rotate a simple shape clockwise or anti-clockwise through a multiple of 90° about a given centre of rotation. • Use a column vector to describe a translation of a simple shape, and perform a specified translation. • Enlarge a simple shape from a given centre using a whole number scale factor, and identify the scale factor of an enlargement. • Fully describe single transformations 	<ul style="list-style-type: none"> • Reading for meaning on problem solving questions. • Identifying the maths from a written question
	3D Shapes	Oracy and Literacy
<p>Draw a net for a cube.</p> <p>What would the elevation of a cone look like?</p>	<ul style="list-style-type: none"> • Recognise the terms face, surface, edge, and vertex, cube, cuboid, prism, cylinder, pyramid, cone and sphere. • Recognise and know the properties of the cube, cuboid, prism, cylinder, pyramid, cone and sphere. • Interpret plans and elevations of simple 3D solids. 	<p>Oracy</p> <ul style="list-style-type: none"> • Explaining reasoning and methodology when solving mathematical problems <p>Literacy</p> <ul style="list-style-type: none"> • Face, surface, edge, vertex, transform, transformation, rotate, reflect, enlarge, scale factor, translate, vector, plan, elevation, gradient, proportion
	Real-Life Graphs	
<p>Explain how to work out the gradient of a line and what it shows about the graph.</p> <p>Sketch the graph for variables that are in direct proportion.</p>	<ul style="list-style-type: none"> • Construct and interpret graphs in real-world contexts. • Interpret straight line gradients as rates of change. • Recognise and interpret graphs that illustrate direct and inverse proportion. 	