



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) Revision: Coordinates and Graphs (F)	Simultaneous Equations Circle Theorems (H) Equation of a circle (H) Revision: Angles (F) Revision: Areas (F) Revision :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 10 (Foundation) Curriculum Content Overview 2017-18

Maths Year 10 (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"> •Use positive integer indices •Calculate positive integer powers and exact roots. •Recognise simple powers of 2, •Simplify algebraic products and quotients. •Interpret and order numbers expressed in standard form. •Convert numbers to and from standard form. •Use a calculator to perform calculations with numbers in standard form. •Know and apply the formula circumference to calculate the circumference of a circle. •Know and apply the formula area to calculate the area of a circle. •Recognise and know the properties of the cube, cuboid, prism, cylinder, pyramid, cone and sphere. •Calculate the surface area and volume of cuboids and other right prisms (including cylinders). 	Reading <ul style="list-style-type: none"> • Reading for meaning on problem solving questions. • Identifying the maths from a written question 	Questioning in lessons Whole class feedback during lessons Topic check-ins Individual questioning in lessons Individual verbal feedback in lessons	5 assessments throughout the academic year Topic check-ins	Inverse Operation Perimeter & Area
	Oracy and Literacy <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 10 (Foundation) Autumn Term 1		
Key Learning Questions	Powers, Roots and Indices	Reading
Write $a^4 \times a^5$ as a single power Evaluate 3^{-2}	<ul style="list-style-type: none"> • Use positive integer indices to write expressions as simply as possible. • Calculate positive integer powers and exact roots. • Simplify algebraic products and quotients. • Use negative integer indices to represent reciprocals • Calculate with integer powers. • Calculate with roots, combining index laws 	<ul style="list-style-type: none"> • Reading for meaning on problem solving questions. • Identifying the maths from a written question
Standard Form		Oracy and Literacy
Put the numbers in order smallest to largest 0.3×10^3 , 30×10^2 , 3, 3000×10^{-2} Without a calculator work out $2 \times 10^3 \times 6 \times 10^5$ giving your answer in standard form	<ul style="list-style-type: none"> • Interpret and order numbers expressed in standard form. • Convert numbers to and from standard form. • Use a calculator to perform calculations with numbers in standard form. • Add, subtract, multiply and divide numbers in standard form, without a calculator. 	Literacy <ul style="list-style-type: none"> • Index, power, root, quotient, law, product, sum, integer, significant, decimal, circumference, arc, sector, radius, perimeter, area, diameter, prism, pyramid, cone, depth, perpendicular
Circumference and Area of a Circle		Oracy
Draw a circle and mark on a tangent What is the formula to work out area of a circle? What is the formula to work out circumference of a circle?	<ul style="list-style-type: none"> • Understand and use the terms centre, radius, chord, diameter and circumference. • Know and apply the formula circumference to calculate the circumference of a circle. • Know and apply the formula area to calculate the area of a circle. • Calculate the arc length of a sector of a circle given its angle and radius. • Calculate the area of a sector of a circle given its angle and radius. 	Explaining reasoning and methodology when solving mathematical problems
Surface Area and Volume of 3D Shapes		
What is the difference between a surface area and a volume?	<ul style="list-style-type: none"> • Recognise and know the properties of the cube, cuboid, prism, cylinder, pyramid, cone and sphere. • Calculate the surface area and volume of cuboids and other right prisms (including cylinders). 	



Year 10 (Foundation) Curriculum Content Overview 2017-

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Maths Year 10 (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"> •Use and convert simple compound units •Interpret and construct charts appropriate to the data type; including frequency tables, bar charts, pie charts and pictograms for categorical data, vertical line charts for ungrouped discrete numerical data. •Interpret multiple and composite bar charts. •Recognise graphical misrepresentation through incorrect scales, labels, etc. •Plot and interpret scatter diagrams for bivariate data. •Recognise correlation. 	<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>Units of Measure</p> <p>Summary Statistics</p> <p>Cumulative Frequency</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 10 (Foundation) Autumn Term 2		
Key Learning Questions	Constructions & Loci	Reading
<p>Write a set of instructions to construct a perpendicular bisector.</p> <p>Write a set of instructions to construct an angle bisector.</p>	<ul style="list-style-type: none"> • Construct the perpendicular bisector and midpoint of a line segment. • Construct the bisector of an angle formed from two lines. • Construct the perpendicular from a point to a line. • Construct the perpendicular to a line at a point. • Know that the perpendicular distance from a point to a line is the shortest distance to the line. • Apply ruler and compass constructions to construct figures and identify the loci of points, to include real-world problems. 	<ul style="list-style-type: none"> • Reading for meaning on problem solving questions. • Identifying the maths from a written question
		<p style="text-align: center;">Oracy & Literacy</p> <p>Oracy</p> <ul style="list-style-type: none"> • Explaining reasoning and methodology when solving mathematical problems
	Compound Measure	
<p>What is the formulas for speed and density?</p> <p>What are the common units to measure speed and density?</p>	<ul style="list-style-type: none"> • Use and convert simple compound units – Speed & rates of pay • Use and convert other compound units (e.g. density and pressure). • Use and convert compound units in algebraic contexts. 	<p>Literacy</p> <ul style="list-style-type: none"> • Unit, speed, density, pressure, rate, perpendicular, bisect, angle, parallel, construct, equidistance, segment, midpoint
	Statistical Charts and Graphs	
<p>What does it mean if two variables are positively correlated?</p> <p>What is discrete data, give three examples.</p> <p>Explain what an outlier is and how you recognise it on a scatter graph.</p>	<ul style="list-style-type: none"> • Interpret and construct charts appropriate to the data type; including frequency tables, bar charts, pie charts and pictograms for categorical data, vertical line charts for ungrouped discrete numerical data. • Recognise graphical misrepresentation • Plot and interpret scatter diagrams and recognise correlation • Design tables to classify data. Interpret and construct line graphs for time series data, and identify trends (e.g. seasonal variations). • Interpret correlation within the context of the variables, and appreciate the distinction between correlation and causation. • Draw a line of best fit by eye, and use it to make predictions. • Interpolate and extrapolate from data, and be aware of the limitations of these techniques. • Recognise outliers on a scatter graph 	



Year 10 (Foundation) Curriculum Content Overview 2017-18

Maths Year 10 (Foundation) Spring 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"> •Use fractions in exact calculations without a calculator. • State answers in terms of Pi •Generate a sequence by spotting a pattern or using a term-to-term rule given algebraically or in words. •Find a position-to-term rule for simple arithmetic sequences, algebraically or in words. •Recognise sequences of triangular, square and cube numbers, and simple arithmetic progressions. •Know the trigonometric ratios •Know basic values for the trigonometric ratios <p>Apply the basic trigonometric ratios</p>	Reading <ul style="list-style-type: none"> • Reading for meaning on problem solving questions. • Identifying the maths from a written question 	Questioning in lessons Whole class feedback during lessons Topic check-ins Individual questioning in lessons Individual verbal feedback in lessons	5 assessments throughout the academic year Topic check-ins	Number Properties, Fraction, Pythagoras
	Oracy and Literacy <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 10 (Foundation) SpringTerm 1		
Key Learning Questions	Exact Form and Surds	Reading
A circle has a radius of 6cm, what is its area giving your answer in terms of π	<ul style="list-style-type: none"> •Use fractions in exact calculations without a calculator. •Use multiples of π in exact calculations without a calculator. 	<ul style="list-style-type: none"> • Reading for meaning on problem solving questions. • Identifying the maths from a written question
	Trigonometry	Oracy and Literacy
What types of triangles do we use for trigonometry? Write down the three trigonometric ratios. Write a step by step guide to finding the missing angle using trigonometry.	<ul style="list-style-type: none"> •Know and apply the trigonometric ratios, $\sin\theta$, $\cos\theta$ and $\tan\theta$ and apply them to find angles and lengths in right- angled triangles in 2D figures. •Know the exact values of $\sin\theta$ and $\cos\theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ, 60^\circ$ and 90°. •Know the exact value of $\tan\theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ$ and 60°. 	Oracy <ul style="list-style-type: none"> • Explaining reasoning and methodology when solving mathematical problems Literacy <ul style="list-style-type: none"> • Exact, calculate, express, simplified, ratio, tri-,sequence, pattern, difference, arithmetic, geometric, recursive, quadratic
	Sequences	
Write down the first 15 square numbers. Draw pictures representing the triangular numbers. Write down the nth term rule for 6, 11, 16, 21, 26, ... What is the name of this sequence? 1,1,2,3,5,8,...	<ul style="list-style-type: none"> •Generate a sequence by spotting a pattern or using a term-to-term rule given algebraically or in words. •Find a position-to-term rule for simple arithmetic sequences, algebraically or in words. •Recognise sequences of triangular, square and cube numbers, and simple arithmetic progressions. •Generate a sequence from a formula for the nth term. •Find a formula for the nth term of an arithmetic sequence. •Recognise Fibonacci and quadratic sequences, and simple geometric progressions 	



Year 10 (Foundation) Curriculum Content Overview 2017-18

Maths Year 10 (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 a table of values to plot graphs of quadratic functions. •Expand products of two linear expressions e.g. $(x+2)(x+3)$ •Factorise quadratic expressions of the form $x^2 + bx + c$. •Solve quadratic equations with coefficient of x^2 equal to 1 by factorising. •Use inequality notation to write down an error interval for a number or measurement rounded or truncated to a given degree of accuracy. •Apply and interpret limits of accuracy. •Identify congruent triangles. •Identify similar triangles. •Compare lengths, areas and volumes using ratio notation and scale factors. •Prove that two triangles are congruent using the cases: •Apply congruent triangles in calculations and simple proofs. •Prove that two triangles are similar. •Apply similarity to calculate unknown lengths in similar figures. 	<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>Linear Equations, Simultaneous Equations, Units of measurements, Inequalities, Transformations, Trigonometry</p>



Assessment Skills, Knowledge and Concepts Map

Maths Year 10 (Foundation) Spring Term 2		
Key Learning Questions	Quadratic Equations	Reading
Draw the graph of $y=x^2+3x-1$ Expand the brackets $(x+3)(x-2)$ Factorise x^2+5x+6	<ul style="list-style-type: none"> • Use a table of values to plot graphs of quadratic functions. • Expand products of two linear expressions e.g. $(x+2)(x+3)$ • Factorise quadratic expressions of the form $x^2 + bx + c$. • Solve quadratic equations with coefficient of x^2 equal to 1 by factorising. 	<ul style="list-style-type: none"> • Reading for meaning on problem solving questions. • Identifying the maths from a written question
	Bounds	Oracy and Literacy
If a van is 6 metres long to the nearest metre what is the error interval for the length.	<ul style="list-style-type: none"> • Use inequality notation to write down an error interval for a number or measurement rounded or truncated to a given degree of accuracy. • Apply and interpret limits of accuracy. 	Oracy <ul style="list-style-type: none"> • Explaining reasoning and methodology when solving mathematical problems Literacy <ul style="list-style-type: none"> • Solve, quadratic, factorise, expands, sketch, plot, function, expression, coefficient, curve, smooth, minimum, maximum, congruent, similar, hypotenuse, limit, bound
	Congruence and Similarity	
Explain what congruent shapes are. How can we check that shapes are similar? What are the conditions needed for two triangles to be congruent?	<ul style="list-style-type: none"> • Identify congruent triangles. • Identify similar triangles. • Compare lengths, areas and volumes using ratio notation and scale factors. • Prove that two triangles are congruent using the cases: • Apply congruent triangles in calculations and simple proofs. • Prove that two triangles are similar. • Apply similarity to calculate unknown lengths in similar figures. 	



Year 10 (Foundation) Curriculum Content Overview 2017-18

Maths Year 10 (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"> •Use the probability scale as a measure of likelihood •Record, describe and analyse the relative frequency of outcomes of repeated experiments •Use relative frequency as an estimate of probability. •Calculate probabilities, expressed as fractions or decimals, for example flipping coins, rolling dice, etc. •Calculate probabilities of simple combined events, •Use probabilities to calculate the number of expected outcomes in repeated experiments •Use systematic listing strategies •Use a two-circle Venn diagrams and use this to calculate related probabilities. •Use simple set notation to describe simple sets of numbers or objects. •Use the addition law for mutually exclusive events. •Use $p(A) + p(\text{not } A) = 1$ •Rearrange formulae to change the subject, where the subject appears once only. 	<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>Fractions, Decimals & Percentages, Algebraic Formulae</p>



Assessment Skills, Knowledge and Concepts Map

Maths Year 10 (Foundation) Summer Term 1		
Key Learning Questions	Probability	Reading
<p>A bag has 3 red counters and 5 blue counters, a counter is chosen at random, replaced and a new counter chosen. What is the probability the counters were both the same colour?</p> <p>What section of a Venn diagram is represented by $A \cap B$?</p> <p>Explain what is meant by</p>	<ul style="list-style-type: none"> • Use the probability scale as a measure of likelihood • Record, describe and analyse the relative frequency of outcomes of repeated experiments • Calculate probabilities, expressed as fractions, decimals or percentages • Calculate probabilities of simple combined events and estimate outcomes • Use a two-circle Venn diagrams and use this to calculate related probabilities. • Use notation to describe sets of numbers or objects. • Use sample spaces for more complex combinations of events • Use tree diagrams to record the probabilities of successive events 	<ul style="list-style-type: none"> • Reading for meaning on problem solving questions. • Identifying the maths from a written question
		<p style="text-align: center;">Literacy and Oracy</p> <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"> • Probability, outcome, event, likelihood, trial, set, frequency, subject, coefficient, inverse, union, intersection
	Manipulating Formulae	
<p>Write R as the subject of the formula $V=IR$</p> <p>Write a as the subject of $v=u+2as$</p>	<ul style="list-style-type: none"> • Rearrange formulae to change the subject, where the subject appears once only. • Rearrange formulae to change the subject, including cases where the subject appears twice, or where a power or reciprocal of the subject appears. 	



Year 10 (Foundation) Curriculum Content Overview 2017-

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Maths Year 10 (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"> •Solve linear simultaneous equations 	Reading <ul style="list-style-type: none"> • Reading for meaning on problem solving questions. • Identifying the maths from a written question 	Questioning in lessons Whole class feedback during lessons Topic check-ins Individual questioning in lessons Individual verbal feedback in lessons	5 assessments throughout the academic year Topic check-ins	Linear Equations, Quadratics Equations



Assessment Skills, Knowledge and Concepts Map

Maths Year 10 (Foundation) Summer Term 2			
Key Learning Questions	Simultaneous Equations	Reading	
Solve the simultaneous equations simultaneously $x + 3y = 8$ $2x + y = 1$	<ul style="list-style-type: none"> • Set up and solve two linear simultaneous equations in two variables algebraically. • Use graphs to find approximate roots of quadratic equations and the approximate solution of two linear simultaneous equations. 	<ul style="list-style-type: none"> • Reading for meaning on problem solving questions. • Identifying the maths from a written question 	
		Oracy and Literacy	
		Oracy <ul style="list-style-type: none"> • Explaining reasoning and methodology when solving mathematical problems 	Literacy <ul style="list-style-type: none"> • Solution, coefficient, equations, equal, manipulate, quadratic, intersection