

Year 9 Foundation Curriculum Overview

Subject: Mathematics

Year 9 Overview:	
Year 9 is the start of the GCSE course and students build upon the <i>core skills</i> learnt in Years 7 and 8 and extend their knowledge with new topics such as Pythagoras and Data Handling. Reasoning skills are developed to ensure understanding.	
Autumn Term	
Outline of Key Learning	Unit Code
<p>Indices, powers and roots</p> <ul style="list-style-type: none"> a. Evaluate expressions involving squares, cubes and roots b. Add, subtract, multiply and divide numbers in index form c. Cancel to simplify a calculation d. Use index notation for powers of 10, including negative powers 	1c
<p>Factors, Multiples and Primes</p> <ul style="list-style-type: none"> a. Find the prime factor decomposition of positive integers and write as a product using index notation b. Find common factors and common multiples of two numbers c. Find the LCM and HCF of two numbers, by listing, Venn diagrams and using prime factors: include finding LCM and HCF given the prime factorisation of two numbers d. Solve simple problems using HCF, LCM and prime numbers 	1d
<p>Expanding and Factorising expressions</p> <ul style="list-style-type: none"> a. Manipulate and simplify algebraic expressions by collecting 'like' terms b. Use index notation when multiplying or dividing algebraic terms c. Write and simplify expressions using squares and cubes; d. Simplify expressions involving brackets, i.e. expand the brackets, then add/subtract e. Recognise factors of algebraic terms involving single brackets f. Factorise algebraic expressions by taking out common factors 	2a 2b



<p>Pythagoras</p> <ul style="list-style-type: none"> a. Understand, recall and use Pythagoras' Theorem in 2D, including leaving answers in surd form b. Apply Pythagoras' Theorem with a triangle drawn on a coordinate grid 	<p>12</p>
<p>Expressions and substituting into formulae</p> <ul style="list-style-type: none"> a. Substitute numbers into expressions involving brackets and powers b. Substitute positive and negative numbers into expressions c. Derive a simple formula, including those with squares, cubes and roots d. Substitute numbers into a formula 	<p>2c</p>

Spring Term	
Outline of Key Learning	Unit Code
<p>Representing Data</p> <ul style="list-style-type: none"> a. Sort, classify and tabulate data for grouped, discrete and continuous data, use inequalities for grouped data, and introduce \leq and \geq signs b. Construct tables for time-series data c. Work out time taken for a journey from a timetable d. Design and use two-way tables for discrete and grouped data e. Draw and interpret; pictograms, dual bar graphs, line graphs, histograms with equal class widths and stem and leaf 	<p>3a 3b</p>
<p>Fractions</p> <ul style="list-style-type: none"> a. Compare fractions, use inequality signs, compare unit fractions b. Convert between mixed numbers and improper fractions c. Add and subtract fractions and write the answer as a mixed number d. Multiply and divide an integer by a fraction 	<p>4a</p>



Fractions, Decimals and Percentages <ul style="list-style-type: none">a. Compare and order fractions, decimals and integers, using inequality signsb. Express a given number as a percentage of another numberc. Convert between fractions, decimals and percentagesd. Order fractions, decimals and percentages	4b
Percentages <ul style="list-style-type: none">a. Calculate amount of increase/decreaseb. Use percentages to solve problems, including comparisons of two quantities using percentagesc. Use percentages in real-life situations, including percentages greater than 100%d. Use a multiplier to increase or decrease by a percentage in any scenario where percentages are used	4c
Pie Charts & Scatter graphs <ul style="list-style-type: none">a. Construct pie charts for categorical data and discrete/continuous numerical datab. Interpret simple pie charts using simple fractions and percentagesc. Understand that the frequency represented by corresponding sectors in two pie charts is dependent upon the total populations represented by each of the pie chartsd. Draw and Interpret scatter graphse. Draw the line of best fit on a scatter diagram by eye, and understand what it representsf. Use the line of best fit make predictions; interpolate and extrapolate apparent trends whilst knowing the dangers of so doing	3c 3d



Summer Term	
Outline of Key Learning	Unit Code
Equations and Inequalities <ul style="list-style-type: none">a. Solve linear equations, with integer coefficients, in which the unknown appears on either side or on both sides of the equationb. Solve linear equations which contain brackets, including those that have negative signs occurring anywhere in the equation, and those with a negative solutionc. Rearrange simple equationsd. Substitute into a formula, and solve the resulting equatione. Show inequalities on number lines and write down whole number values that satisfy an inequalityf. Solve an inequality such as $-3 < 2x + 1 < 7$ and show the solution set on a number lineg. Use inequality notation to specify simple error intervals due to truncation or rounding	5a 5b
Sequences <ul style="list-style-type: none">a. Find the nth term for a pattern, linear and arithmetic sequenceb. Use the nth term of an arithmetic sequence to decide if a given number is a term in the sequence, or find the first term over a certain numberc. Continue a geometric progression and find the term-to-term rule, including negatives, fraction and decimal terms;d. Continue a quadratic sequence and use the nth term to generate terms	5c
Properties of Shapes, angles in polygons <ul style="list-style-type: none">a. Classify quadrilaterals and triangles by their geometric propertiesb. Use geometrical language appropriately and give reasons for angle calculationsc. Calculate and use the sums of the interior angles of n-sided polygonsd. Explain why some polygons fit together and others do not	6a 6b