Head of Department: MFO

Key-stage coordinators: DKI, OPE Teachers: LDA, SDA, DGA, LRA, HRI, TST, ATU

Year 9 Foundation Curriculum Overview Subject: Mathematics

Year 9 Overview:

Year 9 is the start of the GCSE course and students build upon the *core skills* 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

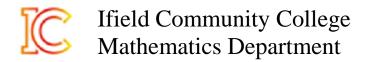
Outline of Key Learning	Unit Code
 Indices, powers and roots a. Evaluate expressions involving squares, cubes and roots b. Add, subtract, multiply and divide numbers in index form c. Cancel to simplify a calculation d. Use index notation for powers of 10, including negative powers 	1c
Factors, Multiples and Primes	
 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
Expanding and Factorising expressions	
 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

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Pythagoras	
a. Understand, recall and use Pythagoras' Theorem in 2D, including leaving answers in surd formb. Apply Pythagoras' Theorem with a triangle drawn on a coordinate grid	12
Expressions and substituting into formulae	
 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 	2c

Spring Term	
Outline of Key Learning	Unit Code
Representing Data	
 a. Sort, classify and tabulate data for grouped, discrete and continuous data, use inequalities for grouped data, and introduce ≤ and ≥ 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 	3a 3b
Fractions a. Compare fractions, use inequality signs, compare unit fractions b. Convert between mixed numbers and improper fractions	4a
b. Convert between mixed numbers and improper fractionsc. Add and subtract fractions and write the answer as a mixed numberd. Multiply and divide an integer by a fraction	4 d



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ions, Decimals and Percentages	
Compare and order fractions, decimals and integers, using inequality signs Express a given number as a percentage of another number	4b
Order fractions, decimals and percentages	
entages	
Calculate amount of increase/decrease Use percentages to solve problems, including comparisons of two quantities using percentages	4c
Use a multiplier to increase or decrease by a percentage in any scenario where percentages are used	
harts & Scatter graphs	
Construct pie charts for categorical data and discrete/continuous numerical data	
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	3c 3d
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Use the line of best fit make predictions; interpolate and extrapolate apparent trends whilst knowing the dangers of so doing	
	Compare and order fractions, decimals and integers, using inequality signs Express a given number as a percentage of another number Convert between fractions, decimals and percentages Order fractions, decimals and percentages Calculate amount of increase/decrease Use percentages to solve problems, including comparisons of two quantities using percentages Use percentages in real-life situations, including percentages greater than 100% Use a multiplier to increase or decrease by a percentage in any scenario where percentages are used harts & Scatter graphs Construct pie charts for categorical data and discrete/continuous numerical data Interpret simple pie charts using simple fractions and percentages Understand that the frequency represented by corresponding sectors in two pie charts is dependent upon the total populations represented by each of the pie charts Draw and Interpret scatter graphs Draw the line of best fit on a scatter diagram by eye, and understand what it represents Use the line of best fit make predictions; interpolate and extrapolate apparent trends whilst knowing

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Summer Term		
	Outline of Key Learning	Unit Code
Equation	s and Inequalities	
bot b. Sol any c. Rea d. Sul e. Sho f. Sol	live linear equations, with integer coefficients, in which the unknown appears on either side or on this sides of the equation live linear equations which contain brackets, including those that have negative signs occurring where in the equation, and those with a negative solution arrange simple equations betitute into a formula, and solve the resulting equation ow inequalities on number lines and write down whole number values that satisfy an inequality live an inequality such as $-3 < 2x + 1 < 7$ and show the solution set on a number line e inequality notation to specify simple error intervals due to truncation or rounding	5a 5b
Sequence	es	
b. Use find c. Col ded	In the nth term for a pattern, linear and arithmetic sequence the nth term of an arithmetic sequence to decide if a given number is a term in the sequence, or a the first term over a certain number number a geometric progression and find the term-to-term rule, including negatives, fraction and cimal terms; number number a quadratic sequence and use the nth term to generate terms	5c
Propertie	s of Shapes, angles in polygons	
b. Use c. Cal	assify quadrilaterals and triangles by their geometric properties e geometrical language appropriately and give reasons for angle calculations lculate and use the sums of the interior angles of n-sided polygons plain why some polygons fit together and others do not	6a 6b