Maths Long Term Plan Year 10 Foundation

Chichester Free School
Nurture • Challenge • Inspire

Temperance Term

W/C	1	2	3	4	5	6	7	
Area of Study	**Number 1**						Algebra 1	HALF TERM
Core learning	**Working with integers** To identify the correct operations required and use written calculations to solve worded problems. To calculate with all four operations of arithmetic using positive and negative integers. To apply the hierarchy of operations to accurately work out calculations involving two or more operations. To identify and write the inverses for operations and apply these to check the results of calculations and develop the skills required to solve equations.	**Properties of integers** To recall and understand key definitions of different types of numbers. To consolidate their understanding of basic place value. To apply their knowledge of factors and primes to express a number as a product of its prime factors. To simplify a collection of numbers that have been multiplied together by writing them in index form. To use the 'listing method' to find the highest common factor and lowest common multiple of a set of numbers. To use a prime factor tree to find the highest common factor and lowest common multiple of a set of numbers.	**Working with fractions** To apply knowledge of factors and multiples to simplify fractions and identify equivalent fractions. To apply the four operations to fractions. To apply knowledge of the four operations to solving problems involving fractions. To calculate fractions of amounts. To express one number as a fraction of another.	**Working with decimals** To apply knowledge of place value to convert decimals to fractions and order fractions. To apply knowledge of rounding to estimate answers to calculations that involve decimals. To be able to add, subtract, multiply ad divide decimals. To use a calculator to complete more complicated calculations that involve decimals.		**Basic Algebra** To interpret and work with algebraic notation including an understanding of correct, formal language and notation. To form algebraic expressions from worded instructions and geometric problems. To substitute to evaluate algebraic expressions for a given value. To simplify products and quotients.	
Opportunities for Challenge: Open middle, goal free, exam questions, "by example", SSDD are good resources but always choose problems based on the current topic.								
Assessment			Progress Check			Progress Check		

W/C	8	9	10	11	12	13	
Area of study	**Assessment**	**Algebra 1**					CHRISTMAS
Core learning		**Basic Algebra** To expand the product of a single term and a binomial. To factorise out common factors and recognise that the HCF must be factored out for an expression to be fully factorised. To form expressions from word problems and use algebra to solve problems in different contexts including number problems.	**Further Algebra** To know what a quadratic expression is. To be able to expand the product of two binomials. To be able to factorise expressions of the form ax^2 + bx + c. To form algebraic expressions to solve problems.	**Equations** To solve linear equations. To understand that identities are equations for which there are an infinite number of solutions as they are true for all values x can take. To form and solve quadratic equations. To understand that different types of equations have a different possible number of solutions. To solve linear simultaneous equations. To know how to read and interpret graphs in various contexts. To be able to use graphs to find approximate solutions to equations.		
Opportunity for Challenge: Open middle, goal free, exam questions, "by example", SSDD are good resources but always choose problems based on the current topic.							
Assessment	Formal, summative			Progress Check			

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Justice Term

W/C	14	15	16	17	18	19	
Area of study	Geometry 1						
Core learning	**2D and 3D shapes** Names and features of common 2D and 3D shapes. Describe and label common features. Identify and describe line and rotational symmetry. Properties of triangles including angle sum. Properties of quadrilaterals including angle sum. Properties of 3D solids.	**Angles** Basic angle facts: vertically opposite, on a straight line, around a point. Parallel angles facts: corresponding angles, alternate angles and co-interior angles. To apply these facts to find missing angles. Proof for the sum of interior angles in a triangle. Proof for the sum of exterior angles. Calculate the sum of interior angles for any polygon. Calculate the size of a single interior angle of a regular polygon. Calculate the size of a single exterior angle of a regular polygon.	**Perimeter** Calculate the perimeter of a given 2D shape. Understand what perimeter means for simple 2D shapes and composite shapes. Calculate the perimeter of composite shapes. Form expressions and equations for the perimeter of a given shape and then solve these equations to find unknown lengths. To know and use a formula for the circumference of a circle to find the value of one variable given the other. Find the arc length of a given sector and hence the perimeter of the shape. Solve contextual problems with the above skills.	**Area** Know and use the formula for calculating the area of rectangles, triangles, parallelograms and trapeziums. Identify how composite shapes have been formed using the above shapes and to calculate the area of composite shapes. Know and use the formula for calculating the area of a circle. Adapt this formula to find the area of a sector given the angle formed at the centre by the two radii. Recognise that the area of some composite shapes can be found by subtracting known areas from larger shapes.		HALF TERM
Opportunity for Challenge: Open middle, goal free, exam questions, “by example”, SSDD are good resources but always choose problems based on the current topic.							
Assessment							

W/C	21	22	23	24	25	26	
Area of study	**Assessment**	**Number 2**				**Algebra 2**	
Core learning		**Rounding and estimation** Round to the nearest positive integer power of ten and apply to real life contexts. Round to a specified number of decimal places. Round to a specified number of significant figures. Truncate values and understand when it’s useful. Using significant figures to estimate answers without a calculator. Use inequalities and identify the upper and lower bounds. Use these with calculations to find maximum and minimum.	**Percentages** Convert between fractions, decimals and percentages. Use fractions, multipliers or calculators to work out percentages of amounts. Express a quantity as a percentage of another. Calculate percentage increase or decrease. Calculate the original amount given the value after an increase or decrease.	**Powers and roots** Write a series of numbers multiplied together in index form. Write an exponent on a calculator. Understand zero and negative indices. Laws of indices for multiplication and division. Laws of indices for powers of indices. Calculate roots of a number. Solve problems involving powers and roots.	**Standard form** Multiplying and dividing by powers of ten to convert numbers to and from standard form. Use scientific calculator efficiently for standard form calculations. Multiply and divide numbers in standard form. Add and subtract numbers in standard form. Solve contextual problems involving standard form.	**Functions and Sequences** Identify term-to-term rules. Generate terms of a sequence from term-to-term rules. Generate terms of a sequence from position-to-term rules. Find the nth term of a linear sequence.	EASTER
Opportunity for Challenge: Open middle, goal free, exam questions, “by example”, SSDD are good resources but always choose problems based on the current topic.							
Assessment							

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Courage Term

W/C	27	28	29	30	31	31	
Area of study	Algebra 2				Probability		HALF TERM
Core learning	Section 1: Functions and Sequences •To identify a term-to-term rule •To generate terms of a sequence from a term-to-term rule •To generate terms of a sequence from a position-to-term rule •To find the nth term of a linear sequence •To generate terms of a sequence from a function rule •To interpret expressions as functions with inputs and outputs •To identify special sequences	Section 2: Formulae •To write formulae to represent real life contexts •To substitute numerical values into formulae •To use formulae from the topic of kinematics •To rearrange formulae to change the subject •To work with formulae in a variety of contexts	Section 3: Inequalities •To understand and interpret inequalities and use the correct symbols to express inequalities •To use a number line to represent an inequality •To solve linear inequalities in one variable and represent the solution set on a number line •To solve problems involving inequalities		Section 1: Basic Probability •To understand and use the vocabulary of probability •To express probabilities as a number between 0 (impossible) and 1 (certain), either as a decimal, fraction or percentage •To understand that outcomes are equally likely if there is the same chance of each outcome occurring •To calculate the theoretical probability of a desired outcome •To calculate the probability of an event NOT happening •To relate relative frequency to theoretical probability •To represent and analyse outcomes of probability experiments •To use tables and frequency trees to organise outcomes •To calculate probabilities in different contexts	Section 2: Further Probability •To construct and use representations (tables, tree diagrams and Venn diagrams) •To use the language and notation of basic set theory •To use the addition rule, including an understanding of mutually exclusive events •To use the multiplication rule, including an understanding of independent events	
Opportunity for Challenge: Open middle, goal free, exam questions, “by example”, SSDD are good resources but always choose problems based on the current topic.							
Assessment							

W/C	32	33	34	35	36	37	
Area of study	**Assessment and revision**		**Statistics**				SUMMER
Core learning			Section 1: Collecting, Interpreting and Representing Data •To be able to infer properties of populations or distributions from a sample, while knowing the limitations of sampling •To be able to interpret and construct tables, charts and diagrams, including frequency tables and bar charts •To be able to draw and interpret pie charts and pictograms for categorical data and vertical line charts for ungrouped, discrete numerical data •To use tables and line graphs for time series data		Section 2: Analysing Data •To calculate summary statistics from raw and grouped data •To compare two or more sets of data •To identify why a graph may be misleading •To construct scatter diagrams •To describe correlation •To draw a line of best fit •To identify outliers		
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Assessment							