Curriculum Map: Year: 8   Subject: Maths

Topic	Key Knowledge *What will all students KNOW by the end of the topic?*	Key Skills *What key skills will be learnt/developed by the end of the topic? What will all students be able to DO by the end of the topic?*	Assessment Opportunities *What are the key pieces of assessment? How will students be assessed?*
Half Term 1	All students will develop their fluency, reasoning and problem solving in: • Numbers and the number system • Calculating	All students will be able to: • Write factors and multiples of a given number • Identify and explain prime numbers • Using listing to find HCF and LCM of 2 or 3 numbers • Solve problems using highest common factors or lowest common multiples • Write a number as a product of its prime factors • Use prime factorisations to find the HCF and LCM of 2 or 3 numbers • Round numbers to a given number of significant figures • Use standard form to write large numbers • Use standard form to write small numbers • 4 operations with positive integers and decimals • Order numbers including negatives • Understand the concept of directed number (eg 3 – 7) • 4 operations with directed number • Square and cube positive and negative numbers • Use a scientific calculator to calculate with negative numbers • Use a scientific calculator to calculate with fractions, both positive and negative • Understand and use the order of operations including multiplication and division • Understand how to use the order of operations including powers and roots	All students will: Complete an end of term assessment on the topics completed within the half term.
Half Term 2	All students will develop their fluency, reasoning and problem solving in:	All students will be able to: • Plot and read coordinates in 4 quadrants • Construct and describe reflections in horizontal, vertical and diagonal mirror lines (45° from horizontal) including in a given equation ($x = a$, $y = a$ or $y=\pm x$)	All students will: Complete an end of term assessment on the topics

	• Visualising and Constructing • Understanding Risk • Manipulating Algebra	• Perform and describe translations given in words or a column vector • Construct and describe rotations using a given angle, direction and centre of rotation • Enlarge a 2D shape by a positive integer scale factor • Use the centre and scale factor to carry out an enlargement with a positive integer scale factor • Find the centre of enlargement • Find the scale factor of an enlargement • Use scale diagrams, including maps • Interpret plans and elevations • Understand and use bearings • Construct scale diagrams involving bearings • Know and use the vocabulary of probability • Understand the use of the 0-1 scale to measure probability • List all the outcomes for an experiment, including sample space diagrams • Work out theoretical probabilities for events with equally likely outcomes • Know that the sum of probabilities for all outcomes is 1 • Apply the fact that the sum of probabilities for all outcomes is 1 • Use and interpret algebraic notation, including: $a^2 b$ in place of $a \times a \times b$ • Simplify an expression involving terms in one variable or a combination of variables • Expand a single bracket by multiplying an algebraic term over a bracket • Factorise an algebraic expression by taking out common factors • Understand index notation (eg 53 = 5 x 5 x 5) • Simplify expressions using the law of indices for multiplication, division and powers • Know and use the zero index • Substitute positive and negative numbers into algebraic expressions • Substitute positive and negative numbers into formulae • Form and use a word formula • Change the subject of a formula when one step is required • Change the subject of a formula when two steps are required	completed within the half term.
Half Term 3	All students will develop their fluency, reasoning and problem solving in: • FDP	All students will be able to: • Divide a whole number by an integer • Divide a number giving a decimal answer (including recurring decimals) • Identify if a fraction is terminating or recurring • Recall some decimal and fraction equivalents	All students will: Complete an end of term assessment on the topics

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	• Proportional Reasoning • Sequences • Angle Facts	• Write a decimal as the sum of tenths, hundredths etc • Write a terminating decimal as a fraction including a mixed number • Write equivalent fractions • Write a fraction in its lowest terms by cancelling common factors • Use a calculator to change any fraction to a decimal • Writing in ratio form • Finding equivalent ratios • Simplifying ratios • Find a relevant multiplier in a situation involving proportion • Identify direct proportion in a situation • Understand and use the connections between ratios and fractions • Solve problems involving division in a ratio with two or more parts • Solve simple ratio problems involving comparison • Solve simple ratio problems involving mixing or concentrations • Apply understanding of proportion to problems involving recipes • Solve problems involving unit pricing • Understand and use compound units • Convert between units of speed • Calculate average speed • Generate terms of a sequence from a position-to-term rule • Find the nth term of an ascending linear sequence • Find the nth term of a descending linear sequence • Use the nth term of a sequence to deduce if a given number is in a sequence • Recall angle facts for straight lines, around a point, triangles and quadrilateral • Solve missing angle problems involving alternate angles • Solve missing angle problems involving corresponding angles • Use knowledge of alternate and corresponding angles to calculate missing angles in geometrical diagrams • Establish the size of an interior angle in a regular polygon • Establish the size of an exterior angle in a regular polygon • Solve missing angle problems in polygons	completed within the half term.

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Half Term 4	All students will develop their fluency, reasoning and problem solving in: • Calculating with FDP • Solving Equations and Inequalities	All students will be able to: • Calculate the percentage of an amount (with and without a calculator) • To be able to change amounts between fractions, decimals and percentages • Identify the multiplier for a percentage increase or decrease when the percentage is greater than 100% • Use calculators to increase an amount by a percentage greater than 100% • Solve problems involving percentage change • Solve original value problems when working with percentages • Solve financial problems including simple interest • Solve linear equations with the unknown on one side • Solve linear equations with the unknown on one side with fractional and negative answers • Solve linear equations with the unknown on one side, including brackets • Solve linear equations with the unknown on both sides, including brackets and negative and fractional answers	All students will: Complete an end of term assessment on the topics completed within the half term.
Half Term 5	All students will develop their fluency, reasoning and problem solving in: • Calculating Space • Algebraic Graphs	All students will be able to: • Calculate area of squares, rectangles triangles, parallelograms and trapezia • Know circle definitions and properties • Calculate the circumference of a circle when radius or diameter is given • Calculate the perimeter of composite shapes that include sections of a circle • Calculate the area of a circle when radius or diameter is given • Calculate the area of composite shapes that include sections of a circle • Calculate the volume of a cube or cuboid • Calculate the volume of any prism • Calculate the volume of a cylinder • Compare lengths, areas and volumes using ratio notation • Plot and read coordinates in the first quadrants • Plot and read coordinates in 4 quadrants • Substitute positive and negative numbers into an algebraic expression • Plot graphs of functions of the form $y = mx \pm c$ • Plot graphs of functions of the form $ax \pm by = c$ • Find the gradient of a straight line on a unit grid • Find the y-intercept of a straight line • Plot graphs of quadratic functions of the form $y = x2 \pm c$ • Plot and interpret straight line graphs from real contexts	All students will: Complete an end of term assessment on the topics completed within the half term.

		• Plot and interpret distance-time graphs and speed-time graphs	
		• Use a distance time graph to calculate speed	

Half Term 6	All students will develop their fluency, reasoning and problem solving in:
	   • Understanding Risk
	   • Presenting Data
		All students will be able to:
		• Sort events onto a probability scale
		• Use a probability word to describe the outcome of an event
		• Write down the probability of a single event
		• Use the fact that all probabilities sum to 1
		• List all elements in a combination of sets using a Venn diagram
		• List outcomes of an event systematically
		• Use a table to list all outcomes of an event
		• Use frequency trees to record outcomes of probability experiments
		• Construct and use sample space diagrams equally likely outcomes
		• Use theoretical or experimental probability to calculate expected outcomes
		• Sort data into tally and frequency tables
		• Construct and interpret bar charts (including composite and compound)
		• Construct and interpret pictograms
		• Construct and interpret line graphs
		• Construct and interpret pie charts
		• Construct and interpret a grouped frequency table for continuous data
		• Plot a scatter diagram of bivariate data
		• Interpret a scatter diagram using understanding of correlation
		• Find the mean, mode, median and range from a list of numbers
		• Solve missing number problems involving averages and range
		• Solve mean problems involving combined 2 data sets
		• Find the mean, mode, median and range from a frequency table
		• Find the modal class of set of grouped data
		• Find the class containing the median of a set of data
		• Calculate an estimate of the mean from a grouped frequency table
		• Estimate the range from a grouped frequency table
		• Analyse and compare sets of data, appreciating the limitations of different statistics (mean, median, mode, range)
			All students will:
			Complete an end of year assessment on the topics completed within the year.