Subject: Mathem	atics Subject Leader: Mr S Card	Year 7	SPRING TERM
Торіс	Key Learning Points	Key Vocabulary	Assessments
Unit 1 – Introduction to Algebra	 Key Knowledge A function is an operation or series of operations that link an input and an output An algebraic expression is a collection of symbols and operators grouped together to show the value of something. They may also contain numbers A formula is a fact or relationship that is expressed in terms of mathematical symbols Applying Knowledge/Methods Generate inputs and outputs using function machines Write algebraic expressions from words Simplify algebraic terms together Expand a single bracket within an expression Simplifying expressions by dividing Substitute values into expressions 	Inputs/outputs Terms Variables Operators Squaring Coefficient Expression Formula Expand Substitute	Units 1 and 2 will be assessed by February half term.
Unit 2 - Data	 Write formulae from words or a diagram Key Knowledge The mean average is calculated by summing all the terms and then dividing by the number of terms The median of a set of data is the middle value when the data is in order The mode of a set of data is the most frequent value The range is calculated by subtracting smallest data point from the largest data point A grouped frequency table is a table organising large data sets into class intervals to make the data more manageable Applying Knowledge/Methods Calculate the averages 'mean', 'median' and 'mode' from a set of data Calculate the measure of spread 'range' from a set of data 	Median Mode Range Mean Axis Tally Dual Compound	

	Compare sets of data using averages and range		
	Collect data using tally charts		
	Understand and draw line graphs		
	Understand and draw bar charts		
	 Understand and draw dual and compound bar charts 		
	Understand and draw frequency bar charts		
	Understand and draw frequency palvgaps		
		Matria	
Unit 3 - Measures	Key Knowledge	Profix	Units 3 and 4 will be
	• Know that $100 \text{ sm} = 1 \text{ sm} = 100 \text{ sm} = 1 \text{ km}$	Kilo	Holiday
	100000 = 100000 = 1000000 = 1000000 = 10000000 = 100000000	Centi	Tonday
	Know that	Mili	
	1000g = 1kg, 1000kg = 1 ton	Perimeter	
	Know that	Area	
	10ml = 1cl, 100cl = 1litre, 1000ml = 1 litre	Scale	
	• The formula for the perimeter of a rectangle is P = 2L + 2W where L is length	Polygon	
	and W is width		
	• The formula for the area of a rectangle is A = L x W where L is length and W		
	is width		
	Applying Knowledge/Methods		
	 Round money to the nearest pound or penny 		
	 Solve problems involving money and time 		
	 Convert measurements into the same units to compare them 		
	• Solve simple problems involving units of measurement in the context of		
	length, mass and capacity		
	Convert between metric units of length, mass and capacity		
	Use scale diagrams		
	Read scales		
	Work out the perimeters of composite shapes and polygons		
	Solve perimeter problems		
	Calculate the areas of shapes made from compound rectangles		
	Solve problems involving area		

Unit 4 – Proportion	Key Knowledge	Percentage
and Ratios	Know that percentage means 'the number of parts per 100'	Direct Proportion
	• Direct proportion: As one amount increases, another mount increases at the	Unitary
	same rate	Ratio
	• To know a ratio is a comparison of two or more numbers that indicates their	Simplify
	size in relation to each other. The numbers are separated with a :	
	Applying Knowledge/Methods	
	 Convert a percentage to a fraction or decimal 	
	 Work with equivalent percentages, fractions and decimals 	
	 Use different strategies to calculate with percentages 	
	 Express one quantity as a percentage of another 	
	Use direct proportion in simple contexts	
	 Solve simple problems involving direct proportion 	
	 Use the unitary method to solve simple word problems involving direct 	
	proportion	
	Use ratio notation	
	Reduce a ratio to its simplest form	
	 Reduce a three-part ratio to its simplest form by cancelling 	
	Find equivalent ratios	
	 Divide a quantity into two parts in a given ratio 	
	 Solve word problems involving ratio 	
	Use ratios and measures	
	 Use fractions to describe and compare proportions 	
	Understand and use the relationship between percentages, fractions, ratio	
	and proportion	

Subject: Mathem	atics	Subject Leader: Mr S Card	Year 7	SUMMER TERM
Торіс		Key Learning Points	Key Vocabulary	Assessments
Unit 5 - Probability	 Key Knowledge Know that probabi Mutually exclusive same time Applying Knowledge/Meth Use a probability set Identify outcomes Calculate probabilit Use a probability set Calculate more core Calculate the probabilit Record data from a Estimate probabilit Make conclusions b Use probability to a occur Apply probabilities 	ities are measured on a scale of 0 to 1 events are events that are impossible to occur at the nods cale with words and equally likely outcomes ties cale from 0 to 1 nplex probabilities ability of an event not happening simple experiment y based on experimental data pased on the results of an experiment estimate the expected number of times an outcome will from experimental data in simple situations	Outcome Mutually Exclusive Experiment Theoretical Prediction	Units 5 and 6 will be assessed by May half term.
Unit 6 – Lines and Angles	 Key Knowledge An acute angle is a An obtuse angle is A reflex angle is an Know that angles in Know that angles in Applying Knowledge/Methener Use a protractor to Estimate the size o Use a ruler and protection 	n angle which measures between 0 and 90 degrees an angle which measures between 90 and 180 degrees angle which measures between 180 and 360 degrees in a triangle sum to 180 in a quadrilateral sum to 360 nods measure and draw angles f angles tractor to draw triangles accurately	Acute Obtuse Right Angled Reflex Sum Regular Irregular Polygon Quadrilateral	

	• Use the rules for angles on a straight line, angles around a point and		
	vertically opposite angles		
	Solve problems involving angles		
	• Use the rule for the sum of angles in a triangle		
	Calculate interior and exterior angles		
	Solve angle problems involving triangles		
	 Identify and name types of quadrilaterals 		
	 Use the rule for the sum of angles in a quadrilateral 		
	Solve angle problems involving quadrilaterals		
Unit 7 – Sequences	Key Knowledge	Term	Units 7 and 8 will be
	 Know that numbers in a sequence are referred to as terms 	Position	assessed by Summer
	• Know that to find a term to term rule, we look at the relationship between	Nth Term	Holiday.
	consecutive terms.	Arithmetic	
	• Know that the relationship between a position and term is referred to as the	Geometric	
	nth term		
	Applying Knowledge/Methods		
	 Recognise, describe and continue number sequences 		
	 Generate terms of a sequence using a one-step term-to-term rule 		
	Find missing terms in a sequence		
	Find patterns and rules in sequences		
	Describe how a pattern sequence grows		
	 Write and use number sequences to model real-life problems 		
	Generate and plot coordinates from a rule		
	 Solve problems and spot patterns in coordinates 		
	Find the midpoint of a line segment		
	Describe and continue special sequences		
	 Use the term-to-term rule to work out more terms in a sequence 		
	 Recognise an arithmetic sequence and a geometric sequence 		
	 Recognise, name and plot graphs parallel to the axes 		
	 Recognise, name and plot the graphs of y = x and y = -x 		

	Plot straight-line graphs using a table of values		
	Draw graphs to represent relationships		
	 Generate terms of a sequence using a position-to-term rule 		
	• Use linear expressions to describe the <i>n</i> th term of simple sequences		
Unit 8 -	Key Knowledge	Congruent	
Transformations	Congruent means exactly the same shape and size	Similar	
	• Similar shapes are exactly the same shape and have the same angles but the	Scale Factor	
	side lengths are different. One is an enlargement of the other.	Reflection	
	• The scale factor is the number we multiply each side length by when	Translation	
	performing an enlargement		
	• An object has symmetry if it can be split into two identical parts.		
	• A reflection is a mirror image of a shape. An image will reflect through a line		
	know as the line of reflection.		
	• A rotation takes a shape and rotates it a certain number of degrees in either		
	an anti-clockwise or clockwise direction around a certain point		
	A translation moves a shape but does not change its size or orientation		
	Applying Knowledge/Methods		
	Identify congruent shapes		
	Enlarge shapes using given scale factors		
	Work out the scale factor given an object and its image		
	Recognise reflection and rotational symmetry in 2D shapes		
	Solve problems using line symmetry		
	Identify all the symmetries of 2D shapes		
	Identify reflection symmetry in 3D shapes		
	Recognise and carry out reflections in a mirror line		
	Describe and reflect a shape on a coordinate grid		
	Describe and carry out rotations on a coordinate grid		
	Translate 2D shapes		
	Transform 2D shapes by combinations of rotations, reflections and		
	translation		

How parents can support learning in the subject this academic year

At the beginning of each new block of work, students will stick a **Knowledge Checklist** into their orange book. This contains a list of the learning objectives for the block (given above), key vocabulary which has been carefully defined and important facts that the students need to know. Helping students to learn the vocabulary and key knowledge will be hugely beneficial to their progress. The objectives are referenced to a Mathswatch video clip which will explain the work, give examples and practise questions. These can be used for pre-learning to gain an insight into what is coming up, consolidation of understanding or catching up on work missed.

Practice is important so please encourage students to complete homework on a weekly basis, suggest they attend Maths Club (Monday after school) which allows them to work on any aspect of their maths with support from several teachers or develop their interest in other areas of maths. Talking and using maths at home is a great way to link maths to everyday situations, for instance scaling up or down ingredients for a recipe, discussing time or money, estimating costs, looking at best value products in the supermarket, converting between units of measure etc.

Due to the hierarchical structure of Mathematics, it is vital that students catch up on any work missed through absences. If a student is absent they are expected to use their Knowledge Checklist to locate a video clip which will explain the work. Students should copy down the examples and work through the questions given. When they return they will need to copy up the missed notes from another student. If they need support with the work then please encourage them to attend Maths Club where staff will be there to help and support.

Recommended Reading

Murderous Maths Series – Poskitt Kjartan Look into my eyes (Ruby Redfort) – Lauren Child The number devil: A Mathematical adventure – Hans Magnus Enzensberger Alex's adventures in Numberland – Alex Bellos Can you solve my problems? – Allex Bellos Math with bad drawings: Illuminating the ideas that shape our reality – Ben Orlin

Points to note

Students are expected to bring a scientific calculator to every maths lesson. The model we currently recommend is the Casio Classwiz FX-83GTX-S. This calculator can be purchased through the school via parentpay.