Year: 9
Subject: Mathematics

Term	Week	Focus	Summary	Learning Outcomes	Parental Support	Independent Learning
1A	1	Properties of number	In the first topic of the year pupils develop their understanding of Identifying and distinguishing between factors, multiples and primes, building on learning from previous years. In the first week pupils are taught systematic listing strategies to find the factors and prime factors of a number.	Identify factors, multiples and primes Write a number as a product of its prime factors Use prime factors to find square and cube roots Find the highest common factor and lowest common multiple of numbers	Detailed unit overview including examples of the technique's children are taught	Lesson resources in case you want to finish work at home
	2	Properties of number	This week pupils progress to using prime factorisation and Venn diagrams to find the HCF and LCM and are then introduced to rational and irrational numbers	Be able to use Venn diagrams to sort data Use a Venn diagram to calculate the HCF and LCM Understand the key terminology 'Integers', 'real number' and rational numbers Be introduced to the concept of surds and irrational numbers	Detailed unit overview including examples of the technique's children are taught	Lesson resources in case you want to finish work at home
	3	Percentages	In this topic students use calculator and non-calculator methods to increase and decrease by a given percentage with an emphasis on developing pupils fluency with using a multiplier to find percentages. The first week sees them aim to develop greater fluency with the techniques they first encountered in year 8	Finding a percentage increases and decreases Express change as a percentage Find the original value after a percentage change Solve problems with percentages (non-calculator) Solve problems with percentages (calculator)	Detailed unit overview including examples of the technique's children are taught	Lesson resources in case you want to finish work at home

	4	Percentages	In this week's pupils concentrate on solving problems related to repeated percentage change and the various types of interest.	Be able to calculate a repeated percentage change Understand interest Calculate simple interest Solve problems involving compound interest	Detailed unit overview including examples of the technique's children are taught	Lesson resources in case you want to finish work at home
	5	Area and volume	The area and volume unit begins with the concept of identifying the nets of 3D shapes and refreshing their knowledge of how to use basic 2D area formulas	Identify and be able to draw the nets of shapes Find the area of 2D shapes Calculate the area and circumference of a circle Find the surface area of cubes and cuboids		Lesson resources in case you want to finish work at home
	6	Area and volume	The second week of the topic focuses on applying pupil's ability to find the areas of 2D shapes to being able to find the surface area of a variety of 3D shapes.	Find the surface area of cubes and cuboids Calculate the surface area of a triangular prism Find the surface area of a cylinder		
	7	Area and volume	In the final week of this topic pupils apply their 2D area skills to find the volume of prisms	Find the volume of cubes and cuboids Find the volume of a cylinder Be able to find the volume of cones, pyramids and spheres Convert metric units of area and volume		

Term	Week	Focus	Summary	Learning Outcomes	Parental Support	Indenpendant Learning
1B	1	Equations inequalities and formulae	During the first week of this topic pupils develop further their fluency with some of the equations and inequalities techniques they covered last year. This include using balancing method to solve a range of equations and inequalities	Solve equations and inequalities Solve equations and inequalities with brackets Solve inequalities including negative numbers Solve equations and inequalities with variables on both sides		
	2	Equations inequalities and formulae	Pupils now further their understanding of the applications of equations and inequalities by applying them to real life contexts including using balancing method to change the subject of a formula	Use inequalities and equations to solve problems Change the subject of a formula (one step) Change the subject of a formula (two step) Change the subject of a complex formula (E)		
	3	Fractions	This one week unit is designed to allow refresh their knowledge fractions techniques they learnt last year to maintain their skillset on this important topic.	Add and subtract fractions Multiply and divide fractions Finding fractions of an amount		
	4	Rates	The rates topic requires pupils to apply their knowledge of ratio and proportion to rates of	Solve problems involving speed, distance and time Draw and interpret distance-time graphs		

			change such as flow problems and acceleration. (Please note some of these objectives are spread over two lessons)			
	5	Rates	In the second week of this topic pupils move on to rates of flow problems and their graphs and converting compound units	Solve flow problems and draw their graphs Convert compound units		
	6	Standard form	This week pupils develop their knowledge of standard form building to the point where they can use the four operations top standard form knowing when to apply their knowledge of the laws of indices	Write numbers in standard form Compare and order numbers in standard form Multiply and divide numbers in standard form Add and subtract numbers in standard form		
	7	End of term test				

Term	Week	Focus	Summary	Learning Outcomes	Parental Support	Indenpendant Learning
2A	1	Maths and money	Over the next 3 weeks pupils look at the links between maths and money. This week they start to develop their financial literacy by looking at how to understand bank accounts and different ways to pay for and save for things.	Understand a bank account Learn how to calculate spending in context Look at a variety of methods to pay for things Understand a variety of ways to save money		
	2	Maths and money	This week pupils go on to look at long term financial commitments such as investing, buying a house and running a house or business.	Investigate pay and jobs Be able to understand the concept of investing Look at how to borrow money to buy a house Understand how to successfully run a house or business		
	3	Maths and money	The final week of the maths and money unit looks at budgeting, borrowing via loans, spending money overseas and the concept of insurance	Understand how to budget given your income To understand the pros and cons of borrowing via a loan Look at how to spend money overseas including exchange rates Be introduced to the concept of insurance		

	4	Straight line graphs	The straight line graphs unit builds on pupils' understanding of the equation of a straight line developed in year 8. This week there is an emphasis on developing pupils understanding of the gradient and the y intercept so they can relate these to the equation of a line	Plot lines parallel to the axis, in the form y = x and the form y = -x Explore gradients Explore intercepts Discover how y = mx + c relates to the intercept and gradient		
	5	Straight line graphs	This week pupils further develop their knowledge of straight line graphs by learning how to rearrange formulas into the form y = mx +c. They also learn for the first time how to find the equation of a line given its graph and apply their knowledge of straight line graphs, the gradient and the y intercept to real life problems	Be able to rearrange equations into the form y = mx + c Find the equation of a line from a graph Interpret the gradient and intercepts of real life graphs Learn how to graph inequalities		
	6	Ratio and proportion	During the first week of this topic on ratio and proportion pupils expand upon their knowledge of direct proportion to include its graphs and inverse proportion	Understand and solve problems involving direct proportion Apply direct proportion to draw and interpret conversion graphs Understand the concept of inverse proportion		
	7	Ratio and proportion	In the second week of this topic pupils look at inverse proportion graphs, review sharing in a ratio and start to solve problems involving ratio and algebra	Draw and use inverse proportion graphs Solve ratio problems with the whole or part of a whole given Solve problems with ratio and algebra		

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2B	1	Constructions and congruence	In this unit pupils develop the skills to construct lines and shapes using a compass and protractor	Draw and measure angles Construct and interpret simple scale drawings Construct triangles using ASA, SAS and SSS Construct an angle bisector		
	2	Constructions and congruence	This week pupil's move on to some more complex construction skills before learning how to identify congruent shapes.	Construct a perpendicular bisector Construct a perpendicular to or from a point Construct more complex polygons Identify congruent figures Understand how to identify congruent triangles		
	3	Similarity	Linked to the unit on construction and congruence pupils now spend a week looking at the concept of similar shapes and how to solve problems involving them	Recognise enlargement and similarity Work out unknown lengths and angles in similar shapes Solve problems with similar triangles		

				Investigate ratios in right angled triangles		
	4	Algebraic manipulation	This unit looks to increase pupil's fluency with Algebraic manipulation to the point they can start to develop the ability to factorise and solve quadratic equation. This week begins this mathematical journey by covering basic algebraic manipulation techniques	Expand single brackets and simplify Factorise into a single bracket Expand double brackets fully simplifying where necessary Use identities to represent equivalence		
	5	Algebraic manipulation	This week pupils progress to the manipulation of quadratic equations	Factorise quadratic equations Solve quadratic equations Expand triple brackets		
	6	End of term test				
	7	Pythagoras theorem	In this unit pupils are introduced to Pythagoras theorem. This week they learn how to solve equations with squares and square roots. They then move on to learning how to identify the hypotenuse of a triangle before starting to apply Pythagoras Theorem.	Solve equations with squares and square roots Identify the hypotenuse of a right angled triangles Determine whether a triangle is right angled Use Pythagoras to find the length of the hypotenuse of a right angled triangle		

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3A	1	Pythagoras theorem	In this week pupils learn how to apply Pythagoras theorem to solve a range of problems with the most able pupils progressing to apply Pythagoras in 3D shapes.	Use Pythagoras theorem to find the length of any side of a right angled triangle Use Pythagoras theorem on coordinate axis Look at simple proofs of Pythagoras theorem Be able to apply Pythagoras theorem in 3D shapes		
	2	Non-linear graphs	This week pupils start their topic on non-linear graphs. In the first week of this topic they concentrate on drawing and interpreting quadratic graphs	Substitute into quadratic expressions Draw quadratic graphs Draw more complex quadratic graphs Interpret quadratic graphs		
	3	Non-linear graphs	In this week pupils move on to drawing an interpreting a variety of other non linear graphs including reciprocal, exponential and cubic graphs	Interpret reciprocal and exponential graphs Draw cubic graphs Interpret cubic graphs Interpret roots, intercepts and turning points		

	4	Probability	The first week of this topic on probability concentrates on developing pupils ability to interpret set notation	Identify and represent sets Identify the intersection of a set Identify the union of a set Find the complement of a set		
	5	Probability	This week pupils refresh their knowledge of finding probabilities and apply it to find relative frequencies and the value of expected outcomes	Find the probability of a single event Use diagrams to work out probabilities Calculate relative frequencies Find the expected outcome of a given event		
	6	Probability / Transformations	This week is used to finish off the topic on probability before pupils start the topic of transformations. The transformation topic starts by refreshing pupils' knowledge of enlargement progressing to enlargement with a given centre of enlargement	Identify and find the probability of independent events Find probabilities from Venn diagrams Enlarge a shape by a given positive scale factor Enlarge a shape from a centre of enlargement by positive scale factor		
	7	Transformations	The first full week of the transformations unit aims to	Enlarge a shape by a fractional scale factor		

			progress pupils understanding of enlargement to the use of fractional and negative scale factors	Enlarge a shape by a negative scale factor Identify and describe an enlargement Rotation about a point		

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3B	1	Transformations	In the final week at of the topic pupils extend their knowledge of rotations, translations and reflections. Some pupils will reach the point where they can find the result of a series of transformations.	Identify and describe a rotation Be able to translate a shape by a given vector Identify and describe a translation Reflect a shape in a given line of reflection Find the result of a series of transformations		
	2	Simultaneous equations	During the first week of this topic pupils develop an understanding of what a simultaneous equation is and reach the point where they can solve a simple simultaneous equation	Use one value to find another Be introduced to simultaneous equations Solve simultaneous equations using graphs		

				Solve simultaneous equations with no adjustments required		
	3	Simultaneous equations	This weeks learning starts with pupils reviewing their knowledge of how to manipulate an equation then applying it to solving simultaneous equations where one or more equation needs to be adjusted.	Be able to manipulate equations Solve simultaneous equations where one requires adjusting Solve simultaneous equations where both require adjustment Solve simultaneous equations by substitution		
	4	Trigonometry	The final topic of the year sees pupils learn how to use trigonometry to find missing sides and angles in right angled triangles. This week pupils learn how to label the sides of a right angle triangle before being gradually introduced to each trigonometric ratio.	Identify the opposite, hypotenuse and adjacent sides of a right angle triangle with a given angle Use the tangent ratio to find unknown side lengths Use the sine and cosine ratios to find missing side lengths Use the trigonometric ratios to find missing angles		
	5	Trigonometry	This week pupils develop fluency in choosing the correct ratio and learn to apply trigonometry to 3 dimensional problems	Choosing the correct method to find missing angles and sides in right angled triangles		

				Know some key angles in right angles triangles and the associated exact values of sin x and cos x Apply trigonometric skills to 3D shapes		
	6	End of year test				