Long term planning grid

Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
7	Number 1	Geometry	Number 2	Fractions	Algebra	Data and probability
8	Number 1	Algebra 1	Number 2	Algebra 2	Geometry 1	Geometry 2
9 Foundation	Chapter 1 Number: Basic number Chapter 2 Geometry and measures: Measures and scale drawings	Chapter 3 Statistics: Charts, tables and averages Chapter 4 Geometry and measures: Angles	Chapter 5 Number: Number properties Chapter 6 Number: approximations	Chapter 7 Number: Decimals and fractions Chapter 8 Algebra: Linear graphs	Chapter 9 Algebra: Expressions and formulae Chapter 10 Ratio and proportion and rates of change: Ratio, speed and proportion	Chapter 11 Geometry and measures: Perimeter and area
9 Higher	Chapter 1 Number: Basic number Chapter 2 Number: Fractions, ratio and proportion	Chapter 3 Statistics: Statistical diagrams and averages Chapter 4 Number: Number and sequences	Chapter 5 Ratio and proportion and rates of change: Ratio and Proportion Chapter 6 Geometry and measures: Angles	Chapter 7 Geometry and measures: Transformations, constructions and loci Chapter 8 Algebra: Algebraic manipulation	Chapter 9 Geometry and measures: Length, area and volume Chapter 10 Algebra: Linear graphs	Chapter 11 Geometry and measures: Right angled triangles
10 Foundation	Chapter 12 Geometry and measures: Transformations Chapter 13 Probability: Probability and events	Chapter 14 Geometry and measures: Volumes and surface areas of prisms Chapter 15 Algebra: Linear equations	Chapter 16 Ratio and proportion and rates of change: Percentages and compound measures Chapter 17 Ratio and proportion and rates of change: Percentages and variation	Chapter 18 Statistics: Representations and interpretation Chapter 19 Geometry and measures: Constructions and loci	Chapter 20 Geometry and measures: Curved shapes and pyramids Chapter 21 Algebra: Numbers and sequences	Revision and exams Chapter 22 Geometry and measures: Right angles triangles
10 Higher	Chapter 12 Geometry and measures: Similarity Chapter 13 Probability: Exploring and applying probability	Chapter 15 Algebra: Equations and inequalities Chapter 14 Number: Powers and standard form Chapter 16 Number: Counting, accuracy, powers and surds	Chapter 17 Algebra: Quadratic equations	Chapter 18 Statistics: Sampling and more complex diagrams Chapter 19 Probability: Combined events	Chapter 20 Geometry and measures: Properties of circles Chapter 21 Ratio and proportion and rates of change: Variation	Revision and exams Chapter 22 Geometry and measures: Triangles
11 Foundation	Review of Chapter 22 Geometry and measures: Right angles triangles Chapter 23 Geometry and measures:	Chapter 24 Probability: Combined events Chapter 25 Number: Powers and standard form	Chapter 26 Algebra: Simultaneous equations and linear inequalities Chapter 27 Algebra: Non-linear graphs	Revision	Revision	Exam

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	Congruency and similarity					
11 Higher	Chapter 22 Geometry and measures: Triangles

Chapter 23 Algebra: Graphs | Chapter 24 Algebra: Algebraic fractions and functions

Chapter 25 Geometry and measures: Vector geometry | Revision | Revision | Revision | Exam |

Medium Term Planning

This needs to cover the big ideas and questions that students will cover with the key knowledge and skills mapped in a clear and logical sequence which aids learning and deepens understanding.

Topic	Big Questions	<mark>Approx</mark> Lessons	Key Knowledge and Skills / Assessment	Links to other subjects
Number 1	Column method addition	1	Use the column method to add numbers	
	Column method subtraction		Use the column method to subtract numbers	
	Decimal numbers and place value	1	Identify the value of each digit
Order decimal numbers	
	Add and subtract decimals using column method	1	Use the column method to add and subtract decimal numbers	
	Solving problems with money	1	Calculate total prices
Calculate change
Solve worded problems	
	Times tables and rules of divisibility	1	Use the rules of divisibility to identify multiples of numbers	
	Multiplication	4	Use the grid method or alternative method to multiply large numbers	
			Use the grid method or alternative method to multiply decimal numbers	
	Division	3	Use the bus stop method or an alternative method to divide large numbers	
			Divide by decimal numbers	
	Negative numbers	3	Use the correct language associated with negative numbers
Order negative numbers
Use the inequality symbols	Science
			Add and subtract with negative numbers, using a number line if necessary	
			Use the rules for multiplying and dividing negative numbers	
	Time and timetables	2	Tell the time on a digital and analogue clock
Represent the time on a digital and analogue clock	

			Write the time in both 12 and 24 hours Add and subtract times	
			Identify key information from timetables Calculate the length of time of an event	
	Estimation	2	Estimate the value of calculations with one or two operations Estimate the value of more complex calculations	
	BIDMAS	2	Recall what 'BIDMAS' stands for Use the correct order of operations when completing calculations	

Topic	Big Questions	Approx Lessons	Key Knowledge and Skills / Assessment	Links to other subjects
Geometry	Types of angles	1	Identify acute, obtuse, reflex and right angles Understand the properties of acute, obtuse, reflex and right angles Recognise the symbol used for right angles	
	Draw & Measure angles	2	Use a protractor to measure angles Estimate the size of angles Use a protractor to draw angles Use types of angles to check answers are reasonable	
	Angles on a straight line	1	calculate missing angles on a straight line	
	Angles at a point	1	calculate missing angles at a point Use vertically opposite angles to calculate angles at point	
	Angles in a triangle	2	Prove the angle sum in a triangle Calculate the missing angles in a triangle Use the properties of isosceles triangles to calculate missing angles in a triangle	
	Angles in a quadrilateral	1	Prove the angle sum in a quadrilateral calculate missing angles in a quadrilateral	
	Properties of shapes	2	Use the correct symbols for equal lengths and parallel lines State the properties of different triangles and quadrilaterals identify regular 2D shapes	
	Angles in Parallel lines	2	Calculate missing angles on a straight line Calculate missing angles at a point Identify vertically opposite angles Identify parallel lines from symbols Identify and use corresponding, alternate and co-interior angles	
	Constructing triangles	2	Use a pair of compasses Construct triangles with a protractor given one side and two angles or one angle and two sides Construct triangles with a pair of compasses given three sides	
	Bisections	2	Use a pair of compasses Understand what 'bisect' means	

			Bisect angles with a pair of compasses Bisect lines with a pair of compasses	
	Scale drawings and maps	1	Use scales on maps to calculate lengths	Geography
	Measuring lengths	Part of construction	Measure lengths to the nearest cm Measure lengths to the nearest mm	
	Conversions between units	1	Convert between different metric units convert between different imperial units convert between metric and imperial units	
	Perimeter	1	calculate the perimeter where all sides are given calculate the perimeter where sides need to be found calculate the length of missing sides given the perimeter	
	Area of rectangles	1	Calculate the area of rectangles giving correct units Calculate the area of rectangles given different units Calculate missing lengths given the area	
	Area of triangles	1	Calculate the area of triangles giving correct units Calculate the area of triangles given different units Calculate missing lengths given the area	
	Area of parallelograms	1	Calculate the area of parallelograms giving correct units Calculate the area of parallelograms given different units Calculate missing lengths given the area	
	Compound areas	1	Calculate the area of rectilinear compound shapes Calculate the area of any compound shape Calculate missing lengths given the area	

Topic	Big Questions	Approx Lessons	Key Knowledge and Skills / Assessment	Links to other subjects
Number 2	Square numbers and indices	1	- Recall what square numbers are - Recall what square root means - Calculate square numbers, square roots and cube numbers	
	Factors and Multiples	2	- Identify factors of any number - Identify multiples of any number	
	Primes	1	- Understand what prime numbers are - Find prime numbers	
	Prime decomposition	3	- Use prime decomposition to write numbers as products of their prime factors - Use index notation to write numbers as products of their prime factors	
	LCM	2	- Find the lowest common multiple of two numbers	

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			- Find the lowest common multiple of three numbers - Find the LCM using prime decomposition	
	HCF	2	- Find the highest common factor of two numbers - Find the highest common factor of three numbers - Find the HCF using prime decomposition	
	Powers of 10	2	- Multiply and divide integers by 10, 100 and 100 - Multiply and divide decimals by 10, 100 and 1000	
	Rounding	2	- Round to the nearest 10, 100 and 1000 - Round to the nearest whole number - Round to 1 or 2 decimal places - Round to 1 or 2 significant figures	
	Inequalities	2	- Use the inequality signs - State the possible integers that satisfy an inequality - Represent inequalities on a number line	

Topic	Big Questions	Approx Lessons	Key Knowledge and Skills / Assessment	Links to other subjects
Fractions	Equivalent Fractions	1	- Use a fraction wall to find equivalent fractions - Find equivalent fractions using numerical methods - Find equivalent fractions where either the numerator or denominator if the new fraction is given	
	Simplifying fractions	1	- Simplify fractions if the fractions is represented on a shape - Simplify fractions using numerical methods	
	Mixed numbers & improper fractions	1	- Convert mixed numbers into improper fractions - Convert improper fractions into mixed numbers	
	Order fractions according to size	2	- Write fractions in increasing or decreasing order - Write fractions and decimals in increasing or decreasing order	
	Fractions of quantities	2	- Calculate a fraction of a quantity using numerical methods	
	Multiply and divide fractions	4	- Multiple a fraction by a fraction - Divide a rational number by a fraction - Multiply and divide improper fractions and mixed numbers	
	Add & Subtract fractions	3	- Understand that to add and subtract fractions, the denominators must be the same - Add and subtract fractions with the same denominator	

Topic	Big Questions	Approx Lessons	Key Knowledge and Skills / Assessment	Links to other subjects
			- Add and subtract fractions where one fraction needs to change - Add and subtract fractions where both fractions need to change - Add and subtract mixed numbers and improper fractions	
	Convert between fractions and decimals	2	- Convert decimal numbers into fractions - Convert fractions into decimal numbers	
	Worded problems	2	- Write worded problems as mathematical calculations then carry out the calculation using written methods.	

Topic	Big Questions	Approx Lessons	Key Knowledge and Skills / Assessment	Links to other subjects
Algebra	Coordinates in one quadrant	1	- Plot coordinates in one quadrant	
	Coordinates in four quadrants	1	- Plot coordinates in four quadrants	
	Patterns in coordinates	2	- Draw the missing coordinates of a shape - Calculate the missing coordinates following patterns	
	Substitution	3	- recognise algebraic expressions - substitute given values into an expression - substitute negative values into an expressions	
	Collecting like terms	2	- add and subtract algebraic terms - simplify expressions with more than one variable by adding and subtracting terms	
	Multiplying and dividing terms	3	- multiply and divide algebraic terms - multiply and divide algebraic terms with more than one variable	
	Expanding brackets	3	- expand brackets with an integer common factor - expand brackets with a variable common factor - expand brackets with both integer and variable common factors - expand brackets and simplify the expression	
	Factorising expressions	2	- factorise expressions with an integer common factor - factorise expressions with a variable common factor - factorise expressions with both integer and variable common factors	
	Constructing expressions	2	- write worded problems using algebraic notation - identify key words and important information	
	Number sequences	1	- Identify term-to-term rules to continue sequences	

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			- Generate sequences given the term-to-term rule and a starting number - Find missing numbers in a sequence	
	Sequences in patterns	1	- Draw the next patterns in a sequence - Identify the rule for getting to the next pattern.	
	Generating sequences from nth term	1	- Generate an arithmetic sequence from its nth term rule - Generate a quadratic sequence from its nth term rule - Find any term of a sequence	
	Finding the nth term of a sequence	1	- Find the nth term of an arithmetic sequence	
	Famous number sequences	1	- Identify triangular numbers - Identify the Fibonacci sequence and state some of its uses - Identify patterns in Pascal's triangle	

Topic	Big Questions	Approx Lessons	Key Knowledge and Skills / Assessment	Links to other subjects
Data and probability	Collecting data	1	- Identify factors that make a good questionnaire - Understand key words such as 'bias' and 'leading question' - Construct clear questionnaires given a hypothesis	Geography Science
	Frequency tables	2	- Put discrete data into a frequency table - Put data into grouped frequency tables - Answer questions using frequency tables	Science
	Two-way tables	2	- Complete partially completed two-way tables - Write information given in a worded problem into a two-way table - Interpret two-way tables	
	Pictograms	2	- Use a key to determine the frequency of an item - Draw pictograms given information - Interpret pictograms	
	Venn and Carroll diagrams	2	- Write information in a Venn diagram - Interpret Venn diagrams - Write information in a Carroll diagram - Interpret Carroll diagrams	
	Bar charts	2	- Accurately construct bar charts given data - Interpret bar charts - Accurately construct and interpret duel bar charts - Accurately construct and interpret composite bar charts	Geography Science Business
	Pie charts	3	- Construct pie charts for data whose frequency total is 4 or 8, or where the pie chart has been divided into the total frequency - Construct pie charts by calculating the size of the angle needed	Geography Science Business

Topic	Big Questions	Approx Lessons	Key Knowledge and Skills / Assessment	Links to other subjects
			- Interpret pie charts - Comparing two pie charts	
	Line graphs	2	- Correctly draw and use axes for a line graph - Plot data on a line graph - Interpret the information given on a line graph	
	Scatter graphs	2	- Plot two variables against each other on a scatter graph - Draw a suitable line of best fit where necessary - Determine correlation and relationships - Predict values given one of the variables - Understand accuracy of predictions	Geography Science
	Mean, Median, Mode and Range	2	- Recall the meaning of mean, median, mode and range - Understand the difference between averages and range - Calculate the mean, median, mode and range from lists of data	Geography Science Business
	Averages from charts and diagrams	1	- Calculate the mode from different charts and diagrams, and the mean, median and range where the data is numerical	Geography Science Business
	Comparing data	2	- Compare data from the same or different representations by calculating the mode or other appropriate average	Geography Science Business
	Calculating probabilities	2	- Calculate the probability of events knowing all outcomes	
	Listing outcomes	1	- List in a suitable way all possible outcomes, including using two-way tables where possible - Calculate the probability from listed outcomes	
	Mutually exclusive events		- Understand what mutually-exclusive means - Identify whether two events are mutually exclusive	
	Experimental probability		- Calculate relative frequency - Determine whether something is biased - Understand how to make an experiment more fair	

Topic	Big Questions	Approx Lessons	Key Knowledge and Skills / Assessment	Links to other subjects
Number	Equivalent ratios	2	- Write ratios in an equivalent form - Write equivalent ratios where one part is given	
	Simplifying ratios	1	- Simplify ratios into its simplest form	
	Sharing quantities into a ratio	2	- Share quantities into a given ratio	
	Given a quantity of part of a ratio	3	- Find missing quantities from ratio problems	
	Unitary method	2	- Understand the use of unitary method - Calculate the value of one item	

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Topic	Big Questions	Approx Lessons	Key Knowledge and Skills / Assessment	Links to other subjects
			- Use the value of one item to calculate the value of another	
	Direct proportion	2	- Understand the relationship direct proportion - Use direct proportion to solve problems	
	Inverse proportion	2	- Understand the relationship inverse proportion - Use inverse proportion to solve problems	
	Indices	3	- Represent indices above square and cube - Change from indices to ordinary numbers	
	Standard form	3	- Represent large and small numbers in correct standard form	Science

Topic	Big Questions	Approx Lessons	Key Knowledge and Skills / Assessment	Links to other subjects
Algebra 1	Substitution into formulae	3	- Replace letters with quantities to find the overall value	Science
	Solving linear equations	8	- Solve one-step and two-step equations - Solve equations with brackets - Solve equations with unknowns on both sides	
	Constructing equations	1	- Write problems as equations to then solve	
	Simultaneous equations	2	- Solve simultaneous equations pictorially - Solve simultaneous equations by elimination	
	Rearranging formulae	2	- Change the subject of a one or two step formula	
	Solving inequalities	2	- Solve linear inequalities - Solve inequalities where the sign changes direction	
	Worded problems	2	- Write problems in algebra and solve to find solutions	

Topic	Big Questions	Approx Lessons	Key Knowledge and Skills / Assessment	Links to other subjects
Number 2	Percentage of shapes	1	- Find the percentage of shape shaded	
	Percentage of quantities	2	- Build from 10%, 50% and 1% to find a percentages of a quantity - Calculate harder percentages by converting to fractions	
	Increase/Decrease by a percentage	3	- Increase/decrease an amount by a given percentage by calculating the percentage first - Increase/decrease an amount by a percentage by using the multipliers	
	Converting between percentage and decimals	1	- Write percentages as decimals - Write decimals as percentages	
	Converting between percentage and fractions	1	- Write percentages as fractions - Write fractions as percentages	
	Writing quantities as a percentage	2	- Write one quantity as a percentage of another	

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	Finding whole given part as percentage	2	- Find the original quantity given part as a percentage	
	Simple interest	2	- Calculate simple interest	
	Successive percentages	2	- Calculate successive percentages one stage at a time - Calculate successive percentages using multipliers	
	Worded problems	2	- Solve worded problems involving percentages	

Topic	Big Questions	Approx Lessons	Key Knowledge and Skills / Assessment	Links to other subjects
Algebra 2	Mid-points	2	- Calculate the mid-point between two coordinates - Find an end coordinate given the mid-point	
	Plotting linear graphs	4	- Plot linear equations on a graph - Plot linear equations on a graph with negative values	
	y = mx + c	2	- Calculate gradient of a line between two points - Write the equation on a line on a graph - Sketch a linear graph given the equation	
	Graphical simultaneous equations	3	- Solve linear simultaneous equations by finding the points of intersection - Solve quadratic simultaneous equations by finding points of intersection	
	Real-life graphs	2	- Draw real-life graphs - Interpret real-life graphs	Science
	Distance-time graphs	2	- Draw distance-times graphs - Interpret distance times graphs - Use D=ST to calculate unknowns	Science
	Conversion graphs	2	- Draw conversion graphs given a conversion - Interpret conversion graphs	Science
	Inequality graphs	2	- Represent linear inequalities on a graph - Identify linear inequalities if they are given on a graph - Find a region bound by inequalities and/or axes	
	Trial & improvement	2	- Use trial and improvement to find an estimate of a solution to equations	

Topic	Big Questions	Approx Lessons	Key Knowledge and Skills / Assessment	Links to other subjects
Geometry	Interior angles in polygons	2	- Identify interior and exterior angles - Determine the angle sum of any 2D shape - Calculate missing angles in polygons	
	Exterior angles of polygons	2	- Identify interior and exterior angles - Calculate the exterior angles for regular polygons	
	Circumference of circles	1	- Identify and use the Pi button on a calculator - Calculate the circumference given the radius	

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			- Calculate the radius given the diameter - Calculate the radius or diameter given the circumference	
	Area of circles	1	- Calculate the area of a circle given the radius - Calculate the area of a circle given the diameter - Calculate missing radius/diameter given the area	
	Compound areas	2	- Calculate the area of rectilinear compound shapes - Calculate the area of any compound shape - Calculate missing lengths given the area	
	Names and properties of 3D shapes	1	- Identify sides, edges and vertices - Identify planes of symmetry for 3D shapes	
	Isometric drawings	1	- Identify isometric paper and use it correctly - Draw cubic shapes using isometric paper - Draw cubic shapes to scale using isometric paper	
	Plans & elevations	2	- Represent cubic shapes from the front, side and above - Draw 3D shapes given the plan, front and side elevation	
	Nets	1	- Draw the net of 3D shapes - Identify the 3D shape given its net	
	Volume of prisms	1	- Identify whether a 3D shape is a prism - Calculate the volume of prisms - Calculate missing sides given the volume	DT
	Surface area of prisms	2	- Calculate the surface area of prisms - Calculate missing sides given the surface area	DT
	3D coordinates	1	- Plot 3D coordinates - Identify patterns in 3D coordinates - Calculate mid-points of 3D coordinates	

Topic	Big Questions	Approx Lessons	Key Knowledge and Skills / Assessment	Links to other subjects
Geometry	Symmetry & rotational symmetry	1	- Identify lines of symmetry in 2D shapes - Understand rotational symmetry - State the order of rotational symmetry	
	Transformations	6	- Translate shapes using words and vectors - Describe a translation - Rotate shapes - Describe a rotation - Reflect in a line not on a coordinate grid - Reflect in a line on a coordinate grid - Describe a reflection - Construct an enlargement with a positive integer scale factor using enlargement rays - Construct an enlargement with a positive integer scale factor on a coordinate grid - Describe an enlargement	
	Congruency	2	- Identify congruent shapes	

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			- Use SSS, ASA, SAS and RHS to identify and prove congruency in triangles	
Pythagoras' Theorem		4	- Calculate the shortest side in a right angled triangle - Calculate the longest side in a right angled triangle	
Constructing triangles		2	- Construct triangles using SAS, SSS, ASA	
Bisecting lines and angles		2	- Construct a perpendicular bisector - Construct an angle bisector	
Loci		3	- Construct the locus of points the same distance from a given point - Construct the locus of points the same distance from a given line - Construct the locus of points the same distance from two given points - Construct the locus of points the same distance from two given lines	

HIGHER

Topic		Big Questions	Approx Lessons	Key Knowledge and Skills / Assessment	Links to other subjects
1: Basic number		1.1 Solving real-life problems	2	Solve problems set in a real-life context.	
		1.2 Multiplication and division with decimals	2	Multiply a decimal number by another decimal number. Divide by a decimal number.	
		1.3 Approximation of calculations	3	Round to a given number of significant figures. Estimate before calculating. Round a calculation to give a reasonable answer.	
		1.4 Multiples, factors, prime numbers, powers and roots	3	Find multiples and factors. Identify prime numbers. Identify square and triangular numbers. Find square roots. Identify cubes and cube roots.	
		1.5 Prime factors, LCM and HCF	3	Identify prime factors. Identify the least common multiple of two numbers. Identify the highest common factor of two multiples.	
		1.6 Negative numbers	2	Multiply and divide positive and negative numbers.	
2: Fractions, ratio and		2.1 One quantity as a fraction of another	1	Find one quantity as a fraction of another.	
		2.2 Adding, subtracting and calculating with fractions	3	Add and subtract fractions with different denominators.	

	2.3 Multiplying and dividing fractions	3	Multiply proper fractions and mixed numbers. Divide by fractions.	
	2.4 Fractions on a calculator	2	Use a calculator to accurately solve problems involving fractions.	
	2.5 Increasing and decreasing quantities by a percentage	3	Increase and decrease quantities by a percentage.	
	2.6 Expressing one quantity as a percentage of another	2	Work out percentage change. Express one quantity as a percentage of another.	
3: Statistical diagrams and averages	3.1 Statistical representation	3	Draw and interpret bar charts and pie charts. Draw and interpret line graphs.	Science Geography Business
	3.2 Statistical measures	4	Use averages to solve more complex problems. Identify the advantages and disadvantages of each type of average and learn which one to use in different situations. Work out and use the range of a set of data. Calculate the mode, the median and the mean from a frequency table. Identify the modal group. Estimate the mean from a grouped frequency table.	Science Geography Business
	3.3 Scatter diagrams	2	Draw, interpret and use scatter diagrams. Draw and use a line of best fit.	Science Geography
4: Number and sequences	4.1 Patterns in number	1	Recognise patterns in number sequences.	
	4.2 Number sequences	2	Generate sequences, given the nth term.	
	4.3 Finding the nth term of a linear sequence	3	Find the nth term of a linear sequence.	
	4.4 Special sequences	2	Recognise and continue some special number sequences such as square numbers.	
	4.5 General rules from given patterns	2	Find the nth term from practical problems involving sequences.	
	4.6 The nth term of a quadratic sequence	2	Generate the terms of a quadratic sequence from the nth term.	
	4.7 Finding the nth term for quadratic sequences	3	Work out the nth term of a quadratic sequence.	
5: Ratio and proportion	5.1 Ratio	3	Simplify a ratio. Express a ratio as a fraction. Divide amounts in given ratios. Complete calculations from a given ratio and partial information.	
	5.2 Direct proportion problems	2	Recognise and solve problems that involve direct proportion.	

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	5.3 Best buys	3	Find either the cost per unit mass or the mass per unit cost and use to this to find which product is cheaper.	
	5.4 Compound measures	3	Recognise and solve problems involving the compound measures of rates of pay, speed, density and pressure.	
	5.5 Compound interest and repeated percentage change	2	Calculate simple and compound interest. Solve problems involving repeated percentage change.	
	5.6 Reverse percentage (working out the original amount)	2	Calculate the original amount after a known percentage change.	
6: Angles	6.1 Angle facts	2	To know the sum of the angles on a straight line and around a point. Use vertically opposite angles.	
	6.2 Triangles	1	To solve missing angle problems in triangles.	
	6.3 Angles in a polygon	2	To work out the sum of the interior angles in a polygon.	
	6.4 Regular polygons	2	To be able to calculate the size of the interior and exterior angles of any regular polygon.	
	6.5 Angles in parallel lines	2	To solve problems involving alternate, corresponding, allied and opposite angles.	
	6.6 Special quadrilaterals	2	To be able to calculate the size of angles in special quadrilaterals using their geometric properties	
	6.7 Scale drawings and bearings	2	To read scale drawings and maps. To draw scale drawings. To use a bearing to specify a direction.	Geography
7: Transformations, constructions and loci	7.1 Congruent triangles	1	Demonstrate that two triangles are congruent.	
	7.2 Rotational symmetry	1	Find the order of rotational symmetry for a 2D shape. Recognise shapes with rotational symmetry.	
	7.3 Transformations	5	Translate, reflect, rotate and enlarge a 2D shape.	
	7.4 Combinations of transformations	2	Combine transformations.	
	7.5 Bisectors	2	Construct the bisectors of lines and angles. Construct angles of 60° and 90°.	
	7.6 Defining a locus	3	Draw a locus for a given rule.	
	7.7 Loci problems	2	Solve practical problems using loci.	
	7.8 Plans and elevations	2	Construct and interpret plans and elevations of 3D shapes.	
8: Algebraic	8.1 Basic algebra	2	Recognise expressions, equations, formulae and identities.	

			Substitute into, manipulate and simplify algebraic expressions.	
	8.2 Factorisation	2	Factorise an algebraic expression.	
	8.3 Quadratic expansion	2	Expand two binomials to obtain a quadratic expression.	
	8.4 Expanding squares	1	Expand the square of a binomial.	
	8.5 More than two binomials	2	Expand more than two binomials.	
	8.6 Quadratic factorisation	2	Factorise a quadratic expression of the form $x^2 + ax + b$ into two linear brackets.	
	8.7 Factorising $ax^2 + bx + c$	3	Factorise a quadratic expression of the form $ax^2 + bx + c$ into two linear brackets.	
	8.8 Changing the subject of a formula	3	Change the subject of a formula.	
9: Length, area and volume	9.1 Circumference and area of a circle	2	Calculate the circumference and area of a circle.	
	9.2 Area of a parallelogram	1	Calculate the area of a parallelogram.	
	9.3 Area of a trapezium	1	Calculate the area of a trapezium.	
	9.4 Sectors	2	Calculate the length of an arc. Calculate the area and angle of a sector.	
	9.5 Volume of a prism	3	Calculate the volume of a prism.	
	9.6 Cylinders	3	Calculate the volume and surface area of a cylinder.	
	9.7 Volume of a pyramid	3	Calculate the volume of a pyramid.	
	9.8 Cones	1	Calculate the volume and surface area of a cone.	
	9.9 Spheres	1	Calculate the volume and surface area of a sphere.	
10: Linear graphs	10.1 Drawing linear graphs from points	1	Draw linear graphs by finding points.	
	10.2 Gradient of a line	3	Find the gradient of a straight line. Draw a line with a certain gradient.	
	10.3 Drawing graphs by gradient-intercept and cover-up methods		Draw graphs using the gradient-intercept method. Draw graphs using the cover-up method.	
	10.4 Finding the equation of a line from its graph	3	Find the equation of a line, using its gradient and intercept. Find the equation of a line given two points on the line.	
	10.5 Real-life uses of graphs	2	Convert from one unit to another unit by using a conversion graph. Use straight-line graphs to find formulae.	Science
	10.6 Solving simultaneous equations using graphs	3	Solve simultaneous linear equations using graphs.	
	10.7 Parallel and perpendicular lines	3	Draw linear graphs parallel or perpendicular to other lines and passing through a specific point.	

11: Right-angled triangles	11.1 Pythagoras' theorem	1	Calculate the length of the hypotenuse in a right angled triangle.	
	11.2 Finding the length of the shorter side	1	Calculate the length of a shorter side in a right angled triangle.	
	11.3 Applying Pythagoras' theorem in real-life situations	2	Solve practical problems involving Pythagoras' theorem.	
	11.4 Pythagoras' theorem and isosceles triangles	1	Use Pythagoras' theorem and isosceles triangles.	
	11.5 Pythagoras' theorem in three dimensions	2	Use Pythagoras' theorem to solve problems involving three dimensions	
	11.6 Trigonometric ratios	1	Use the three trigonometric ratios.	
	11.7 Calculating angles		Use the trigonometric ratios to calculate an angle.	
	11.8 Using the sine and cosine functions	2	Find lengths of sides and angles in right-angled triangles using the sine and cosine functions.	
	11.9 Using the tangent function	1	Find lengths of sides and angles in right-angled triangles using the tangent function.	
	11.10 Which ratio to use		Decide which trigonometric ratio to use in a right-angled triangle.	
	11.11 Solving problems using trigonometry	2	Solve practical problems using trigonometry. Solve problems using an angle of elevation or an angle of depression.	
	11.12 Trigonometry and bearings	2	Solve bearing problems using trigonometry.	
	11.13 Trigonometry and isosceles triangles	1	Use trigonometry to solve problems involving isosceles triangles.	
12: Similarity	12.1 Similar triangles	2	Show two triangles are similar. Work out the scale factor between similar triangles.	
	12.2 Similar shapes	3	Area and volume of similar shapes	
13: Exploring and applying probability	13.1 Experimental probability	3	Calculate experimental probabilities and relative frequencies. Estimate probabilities from experiments. Use different methods to estimate probabilities.	
	13.2 Mutually exclusive exhaustive outcomes	1	Recognise mutually exclusive, complementary and exhaustive events.	
	13.3 Expectation	2	Predict the likely number of successful events, given the number of trials and the probability of any one outcome.	
	13.4 Probability and two-way tables	2	Read two-way tables and use them to work out probabilities.	
	13.5 Probability and Venn diagrams	2	Use Venn diagrams to solve probability questions.	

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15: Equations and inequalities	15.1 Linear equations	5	Solve equations in which the variable (the letter) appears as part of the numerator of a fraction. Solve equations where you have to expand brackets first Solve equations where the variable appears on both sides of the equals sign Set up equations from given information and then solve them.	
	15.2 Elimination methods for simultaneous equations	2	Solve simultaneous linear equations in two variables using the elimination method.	
	15.3 Substitution method for simultaneous equations	3	Solve simultaneous linear equations in two variables using the substitution method.	
	15.4 Balancing coefficients to solve simultaneous equations	2	Solve simultaneous linear equations by balancing coefficients.	
	15.5 Using simultaneous equations to solve problems	1	Solve problems using simultaneous linear equations.	
	15.6 Linear inequalities	1	Solve a simple linear inequality and represent it on a number line.	
	15.7 Graphical inequalities	3	Show a graphical inequality Find regions that satisfy more than one graphical inequality.	
	15.8 Trial and improvement	2	Estimate the answer to an equations that does not have an exact solution using trial and improvement.	
14: Powers and standard form	14.1 Powers (indices)	1	Use powers (also known as indices). Multiply and divide by powers of 10.	Science
	14.2 Rules for multiplying and dividing powers	2	Use rules for multiplying and dividing powers.	
	14.3 Standard form	3	Change a number into standard form. Calculate using numbers in standard form.	Science
16: Counting, accuracy, powers and surds	16.1 Rational numbers, reciprocals, terminating and recurring decimals	4	Recognise rational numbers, reciprocals, terminating decimals and recurring decimals. Convert terminal decimals to fractions. Convert fractions to recurring decimals. Find reciprocals of numbers or fractions.	
	16.2 Estimating powers and roots	1	How to estimate powers and roots of any given positive number.	
	16.3 Negative and fractional powers	3	Apply the rules of powers to negative and fractional powers.	

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			Find and use the relationship between negative powers and roots.	
	16.4 Surds	3	Simplify surds. Calculate and manipulate surds, including rationalising a denominator.	
	16.5 Limits of accuracy	2	Find the error interval or limits of accuracy of numbers that have been rounded to different degrees of accuracy.	
	16.6 Problems involving limits of accuracy	2	Combine limits of two or more variables together to solve problems.	
	16.7 Choices and outcomes	2	Work out the number of choices, arrangements or outcomes when choosing from lists or sets.	
17: Quadratic equations	17.1 Plotting quadratic graphs	2	Draw and read values from quadratic graphs.	
	17.2 Solving quadratic equations by factorisation	3	Solve a quadratic equation by factorisation. Rearrange a quadratic equation so that it can be factorised.	
	17.3 Solving a quadratic equation by using the quadratic formula	2	Solve a quadratic equation by using the quadratic formula. Recognise why some quadratic equations cannot be solved.	
	17.4 Solving quadratic equations by completing the square	3	Solve a quadratic equation by completing the square.	
	17.5 The significant points of a quadratic curve	2	Identify the significant points of a quadratic function graphically. Identify the roots of a quadratic function by solving a quadratic equation. Identify the turning point of a quadratic function by using symmetry or completing the square.	
	17.6 Solving one linear and one non-linear equation using graphs	2	Solve a pair of simultaneous equations where one is linear and one is non-linear, using graphs.	
	17.7 Solving quadratic equations by the method of intersection	1	Solve equations by the method of intersecting graphs.	
	17.8 Solving linear and non-linear simultaneous equations algebraically	2	Solve simultaneous equations where one equation is linear and the other is non-linear.	
	17.9 Quadratic inequalities	3	Solve quadratic inequalities.	
18: Sampling and more complex	18.1 Collecting data	1	Understand sampling. Collect unbiased reliable data for a sample.	Science
	18.2 Frequency polygons	2	Draw and interpret frequency polygons.	

	18.3 Cumulative frequency graphs	4	Draw and interpret cumulative frequency graphs.	
	18.4 Box plots	2	Draw and interpret box plots.	
	18.5 Histograms	4	Draw and interpret histograms where the bars are of equal width. Draw and interpret histograms where the bars are of unequal width. Calculate the median, quartiles and interquartile range from a histogram.	
19: Combined events	19.1 Addition rules for outcomes of events	1	Work out the probability of different outcomes of combined events.	
	19.2 Combined events	2	Work out the probability of two outcomes or events occurring at the same time.	
	19.3 Tree diagrams	2	Use tree diagrams to work out the probability of combined events.	
	19.4 Independent events	3	Use the connectors 'and' and 'or' to work out the probabilities for combined events.	
	19.5 Conditional probability	3	Work out the probability of combined events when the probabilities change after each event.	
20: Properties of circles	**20.1 Circle theorems**	3	Prove and use circle theorems to work out angles created in a circle from points on a circumference.	
	20.2 Cyclic quadrilaterals	1	Find the size of angles in cyclic quadrilaterals.	
	20.3 Tangents and chords	1	Use tangents and chords to find the size of angles in circles.	
	20.4 Alternate segment theorem	1	Use the alternate segment theorem to find the size of angles in circles.	
21: Variation	**21.1 Direct proportion**	3	Solve problems where two variables have a directly proportional relationship. Work out the constant of proportionality.	
	21.2 Inverse proportion	3	Solve problems where two variables have an inversely proportional relationship. Work out the constant of proportionality.	
22: Triangles	22.1 Further 2D problems	2	Use trigonometric ratios and Pythagoras' theorem to solve more complex two-dimensional problems.	
	22.2 Further 3D problems	4	Use trigonometric ratios and Pythagoras' theorem to solve more complex three-dimensional problems.	

		22.3 Trigonometric ratios of angles between 0° and 360°	3	Find the sine, cosine and tangent of any angle from 0° to 360°	
		22.4 Solving any triangle	3	Use the sine rule and the cosine rule to find sides and angles in any triangle	
		22.5 Using sine to calculate the area of any triangle	3	Work out the area of a triangle if you know two sides and the included angle.	
	23: Graphs	23.1 Distance –time graphs	2	Interpret distance–time graphs Draw a graph of the depth of liquid as a container is filled.	Science
		23.2 Velocity–time graphs	3	Read information from a velocity–time graph. Work out the distance travelled from a velocity–time graph. Work out the acceleration from a velocity–time graph.	Science
		23.3 Estimating the area under a curve	3	Use areas of rectangles, triangles and trapeziums to estimate the area under a curve. Interpret the meaning of the area under a curve.	Science
		23.4 Rates of change	3	Draw a tangent at a point on a curve and use it to work out the gradient at a point on a curve. Interpret the gradient at a point on a curve.	Science
		23.5 Equation of a circle	3	Find the equation of a tangent to a circle.	
		23.6 Other graphs	1	Recognise and plot cubic, exponential and reciprocal graphs.	
		23.7 Transformation of the graph y = f(x)	3	Transform a graph	
	24: Algebraic fractions and functions	24.1 Algebraic fractions	3	Simplify algebraic fractions Solve equations containing algebraic fractions.	
		24.2 Changing the subject of a formula	2	Change the subject of a formula where the subject occurs more than once.	
		24.3 Functions	3	Find the output of a function. Find the inverse function.	
		24.4 Composite functions	3	Find the composite of two functions.	
		24.5 Iteration	3	Find an approximate solution for an equation using the process of iteration.	
	25: Vector geom	25.1 Properties of vectors	2	Add and subtract vectors.	
		25.2 Vectors in geometry	4	Use vectors to solve geometric problems.	

Foundation

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Topic	Big Questions	Approx Lessons	Key Knowledge and Skills / Assessment	Links to other subjects
1: Number: Basic number	1.1 Place value and ordering numbers	2	use a number line to represent negative numbers use inequalities with negative numbers compare and order positive and negative numbers.	
	1.3 The four rules	2	use the four rules of arithmetic with integers and decimals.	
	1.2 Order of operations and BIDMAS	3	work out the answers to problems with more than one mathematical operation.	
2: Geometry and measures: Measures and scale drawings	2.1 Systems of measurement	2	convert from one metric unit to another convert from one imperial unit to another.	Science
	2.2 Conversion factors	2	use approximate conversion factors to change between imperial units and metric units.	
	2.3 Scale drawings	2	read and draw scale drawings use a scale drawing to make estimates.	Science
	2.4 Nets	2	draw nets of some 3D shapes identify a 3D shape from its net.	
	2.5 Using an isometric grid	3	read from and draw on isometric grids interpret diagrams to draw plans and elevations.	
3: Statistics: Charts, tables and averages	3.1 Frequency tables	2	use tally charts and frequency tables to collect and represent data use grouped frequency tables to collect and represent data.	Geography Science
	3.2 Statistical diagrams	4	draw pictograms to represent statistical data draw bar charts and vertical line charts to represent statistical data.	Geography Science Business
	3.3 Line graphs	2	draw a line graph to show trends in data.	"
	3.4 Statistical averages	5	work out the mode, median, mean and range of small sets of data decide which is the best average to use to represent a data set.	Science
4: Geometry	4.1 Angles facts	2	calculate angles on a straight line calculate angles around a point use vertically opposite angles.	

	4.2 Triangles	1	recognise and calculate the angles in different sorts of triangle.	
	4.3 Angles in a polygon	2	calculate the sum of the interior angles in a polygon.	
	4.4 Regular polygons	2	calculate the exterior angles and the interior angles of a regular polygon.	
	4.5 Angles in parallel lines	2	calculate angles in parallel lines.	
	4.6 Special quadrilaterals	3	use angle properties in quadrilaterals.	
	4.7 Bearings	2	use a bearing to specify a direction.	
5: Number: Number properties	5.1 Multiples of whole numbers	2	find multiples of whole numbers recognise multiples of numbers.	
	5.2 Factors of whole numbers	2	identify the factors of a number.	
	5.3 Prime numbers	1	identify prime numbers.	
	5.4 Prime factors, LCM and HCF	3	identify prime factors identify the lowest common multiple (LCM) of two numbers identify the highest common factor (HCF) of two numbers.	
	5.5 Square numbers	1	identify square numbers use a calculator to find the square of a number.	
	5.6 Square roots	1	recognise the square roots of square numbers up to 225 use a calculator to find the square roots of any number.	
	5.7 Basic calculations on a calculator	2	use some of the important keys when working on a calculator.	
6: Number: Approximations	6.1 Rounding whole numbers	1	round a whole number.	
	6.2 Rounding decimals	1	round decimal numbers to a given accuracy.	
	6.3 Approximating calculations	3	identify significant figures round numbers to a given number of significant figures use approximation to estimate answers and check calculations round a calculation at the end of a problem, to give what is considered to be a sensible answer.	
7: Number: Decimals and fractions	7.1 Calculating with decimals	2	multiply and divide with decimals.	
	7.2 Fractions and reciprocals	3	recognise different types of fraction, reciprocal, terminating decimal and recurring decimal convert terminating decimals to fractions	

			convert fractions to decimals find reciprocals of numbers or fractions.	
	7.3 Writing one quantity as a fraction of another	2	work out a fraction of a quantity find one quantity as a fraction of another.	
	7.4 Adding and subtracting fractions	3	add and subtract fractions with different denominators.	
	7.5 Multiplying and dividing fractions	2	multiply proper fractions multiply mixed numbers divide by fractions.	
	7.6 Fractions on a calculator	2	use a calculator to add and subtract fractions use a calculator to multiply and divide fractions.	
8: Algebra: Linear graphs	8.1 Graphs and equations	2	use flow diagrams to draw graphs work out the equations of horizontal and vertical lines.	
	8.2 Drawing linear graphs by finding points	2	draw linear graphs without using flow diagrams.	
	8.3 Gradient of a line	2	work out the gradient of a straight line draw a line with a certain gradient.	Science
	8.4 $y = mx + c$	3	draw graphs using the gradient-intercept method draw graphs using the cover-up method.	
	8.5 Finding the equation of a line from its graph	3	work out the equation of a line, using its gradient and y-intercept work out the equation of a line given two points on the line.	
	8.6 The equation of a parallel line	2	work out the equation of a linear graph that is parallel to another line and passes through a specific point.	
	8.7 Real-life uses of graphs	2	convert from one unit to another unit by using a conversion graph use straight-line graphs to work out formulae.	Science
	8.8 Solving simultaneous equations using graphs	2	solve simultaneous linear equations using graphs.	
9: Algebra: Expressions and formulae	9.1 Basic algebra	2	write an algebraic expression recognise expressions, equations, formulae and identities.	
	9.2 Substitution	2	substitute into, simplify and use algebraic expressions.	
	9.3 Expanding brackets	1	expand brackets such as $2(x − 3)$ expand and simplify brackets.	

	9.4 Factorisation	2	factorise an algebraic expression.	
	9.5 Quadratic expansion	2	expand two linear brackets to obtain a quadratic expression.	
	9.6 Quadratic factorisation	3	factorise a quadratic expression of the form $x^2 + ax + b$ into two linear brackets.	
	9.7 Changing the subject of a formula	3	change the subject of a formula.	
10: Ratio and proportion and rates of change: Ratio, speed and proportion	10.1 Ratio	4	simplify a ratio express a ratio as a fraction divide amounts into given ratios complete calculations from a given ratio and partial information.	
	10.2 Speed, distance and time	4	recognise the relationship between speed, distance and time calculate average speed from distance and time calculate distance travelled from the speed and the time taken calculate the time taken on a journey from the speed and the distance.	Science
	10.3 Direct proportion problems	2	recognise and solve problems that involve direct proportion.	
	10.4 Best buys	3	find the cost per unit mass find the mass per unit cost use the above to find which product is better value.	
11: Geometry and measures: Perimeter and area	11.1 Rectangles	1	calculate the perimeter and area of a rectangle.	DT
	11.2 Compound shapes	1	calculate the perimeter and area of a compound shape made from rectangles.	DT
	11.3 Area of a triangle	1	calculate the area of a triangle use the formula for the area of a triangle.	DT
	11.4 Area of a parallelogram	1	calculate the area of a parallelogram use the formula for the area of a parallelogram.	
	11.5 Area of a trapezium	1	calculate the area of a trapezium use the formula for the area of a trapezium.	
	11.6 Circles	1	recognise terms used for circle work calculate the circumference of a circle.	
	11.7 The area of a circle	2	calculate the area of a circle.	

		11.8 Answers in terms of π	2	give answers for circle calculations in terms of ð.	
12: Geometry and measures: Transformations		12.1 Rotational symmetry	1	work out the order of rotational symmetry for a 2D shape recognise shapes with rotational symmetry.	
		12.2 Translation	2	translate a 2D shape.	
		12.3 Reflections	2	reflect a 2D shape in a mirror line.	
		12.4 Rotations	2	rotate a 2D shape about a point	
		12.5 Enlargements	3	enlarge a 2D shape by a scale factor.	
		12.6 Using more than one transformation	2	use more than one transformation.	
		12.7 Vectors	3	represent vectors add and subtract vectors.	
13: Probability: Probability and events		13.1 Calculating probabilities	2	use the probability scale and the language of probability calculate the probability of an outcome of an event.	
		13.2 Probability that an outcome will not happen	1	calculate the probability of an outcome not happening when you know the probability of that outcome happening.	
		13.3 Mutually exclusive and exhaustive outcomes	1	recognise mutually exclusive and exhaustive outcomes.	
		13.4 Experimental probability	3	calculate experimental probabilities and relative frequencies from experiments recognise different methods for estimating probabilities.	
		13.5 Expectation	3	predict the likely number of successful outcomes, given the number of trials and the probability of any one outcome.	
		13.6 Choices and outcomes	2	apply systematic listing and counting strategies to identify all outcomes for a variety of problems.	
14: Geometry and measures: Volumes and surface areas of		14.1 3D shapes	2	use the correct terms when working with 3D shapes.	
		14.2 Volume and surface area of a cuboid	2	calculate the surface area and volume of a cuboid.	
		14.3 Volume and surface area of a prism	3	calculate the volume and surface area of a prism.	
		14.4 Volume and surface area of cylinders	3	calculate the volume and surface area of a cylinder.	
1	5	15.1 Solving linear equations	5	solve linear equations such as	

			$3x - 1 = 11$ where the variable only appears on one side use inverse operations and inverse flow diagrams solve equations by balancing solve equations in which the variable (the letter) appears in the numerator of a fraction	
	15.2 Solving equations with brackets	2	solve equations where you have to first expand brackets.	
	15.3 Solving equations with the variable on both sides	3	solve equations where the variable appears on both sides of the equals sign.	
16: Ratio and proportion and rates of change: Percentages and compound measures	16.1 Equivalent percentages, fractions and decimals	1	convert percentages to fractions and decimals and vice versa.	
	16.2 Calculating a percentage of a quantity	1	calculate a percentage of a quantity.	
	16.3 Increasing and decreasing quantities by a percentage	2	increase and decrease quantities by a percentage.	
	16.4 Expressing one quantity as a percentage of another	1	express one quantity as a percentage of another work out percentage change.	
	16.5 Compound measures	3	recognise and solve problems involving the compound measures of rates of pay, density and pressure.	Science Business
17: Ratio and proportion and rates of change: Percentages and variation	17.1 Compound interest and repeated percentage change	4	calculate simple interest calculate compound interest solve problems involving repeated percentage change.	
	17.2 Reverse percentage (working out the original value)	2	calculate the original amount, given the final amount, after a known percentage increase or decrease.	
	17.3 Direct proportion	2	solve problems in which two variables have a directly proportional relationship (direct variation) work out the constant of proportionality recognise graphs that show direct variation.	
	17.4 Inverse proportion	2	solve problems in which two variables have an inversely proportional relationship (inverse variation) work out the constant of proportionality.	
1 8 ∴ ∽	18.1 Sampling	2	obtain a random sample from a	Geography

				Science
			population collect unbiased and reliable data for a sample.	
	18.2 Pie charts	2	draw and interpret pie charts.	Geography Science Business
	18.3 Scatter diagrams	3	draw, interpret and use scatter diagrams draw and use a line of best fit.	Science
	18.4 Grouped data and averages	5	identify the modal group calculate an estimate of the mean from a grouped table.	
19: Geometry and measures: Constructions and loci	19.1 Constructing triangles	3	construct accurate drawings of triangles, using a pair of compasses, a protractor and a straight edge.	
	19.2 Bisectors	2	construct the bisectors of lines and angles construct angles of 60° and 90°	
	19.3 Defining a locus	3	draw a locus for a given rule.	
	19.4 Loci problems	2	solve practical problems using loci.	
20: Geometry and measures: Curved shapes and pyramids	20.1 Sectors	2	calculate the length of an arc calculate the area and angle of a sector.	
	20.2 Pyramids	2	calculate the volume and surface area of a pyramid.	
	20.3 Cones	2	calculate the volume and surface area of a cone.	
	20.4 Spheres	2	calculate the volume and surface area of a sphere.	
21: Algebra: Number and sequences	21.1 Patterns in number	1	recognise patterns in number sequences.	
	21.2 Number sequences	2	recognise how number sequences are built up generate sequences, given the nth term.	
	21.3 Finding the nth term of a linear sequence	2	find the nth term of a linear sequence.	
	21.4 Special sequences	2	recognise and continue some special number sequences understand how prime, odd and even numbers interact in addition, subtraction and multiplication problems.	
	21.5 General rules from given patterns	2	find the nth term from practical problems involving sequences.	
23: Geometr	23.1 Congruent triangles	2	demonstrate that two triangles are congruent.	
	23.2 Similarity	3	recognise similarity in any two	

			shapes show that two shapes are similar work out the scale factor between similar shapes.	
22: Geometry and measures: Right-angled triangles	22.1 Pythagoras' theorem	2	Know what Pythagoras' theorem is calculate the length of the hypotenuse in a right-angled triangle.	
	22.2 Calculating the length of a shorter side	1	calculate the length of a shorter side in a right-angled triangle.	
	22.3 Applying Pythagoras' theorem in real-life situations	1	Solve problems using Pythagoras' theorem	
	22.4 Pythagoras' theorem and isosceles triangles	1	use Pythagoras' theorem in isosceles triangles.	
	22.5 Trigonometric ratios	1	define, understand and use the three trigonometric ratios.	
	22.6 Calculating lengths using trigonometry	2	use trigonometric ratios to calculate a length in a right-angled triangle.	
	22.7 Calculating angles using trigonometry	1	use the trigonometric ratios to calculate an angle.	
	22.8 Trigonometry without a calculator	2	work out and remember trigonometric values for angles of 30°, 45°, 60° and 90°.	
	22.9 Solving problems using trigonometry	2	solve practical problems using trigonometry solve problems using an angle of elevation or an angle of depression.	
	22.10 Trigonometry and bearings	2	solve bearing problems using trigonometry.	
	22.11 Trigonometry and isosceles triangles.	1	use trigonometry to solve problems involving isosceles triangles.	
24: Probability: Combined events	24.1 Combined events	2	work out the probabilities when two or more events occur at the same time.	
	24.2 Two-way tables	2	read two-way tables and use them to work out probabilities.	
	24.3 Probability and Venn diagrams	2	use Venn diagrams to solve probability questions.	
	24.4 Tree diagrams	4	understand frequency tree diagrams and probability tree diagrams use probability tree diagrams to work out the probabilities involved in combined events.	
25: Number: Powers and standard form	25.1 Powers (indices)	2	write a number as a power of another number use powers (also known as indices) multiply and divide by powers of 10.	Science

	25.2 Rules for multiplying and dividing powers	2	use rules for multiplying and dividing powers multiply and divide numbers by powers of 10.	
	25.3 Standard form	3	write a number in standard form calculate with numbers in standard form.	Science
26: Algebra: Simultaneous equations and linear inequalities	26.1 Elimination method for simultaneous equations	2	solve simultaneous linear equations in two variables using the elimination method.	
	26.2 Substitution method for simultaneous equations	2	solve simultaneous linear equations in two variables using the substitution method.	
	26.3 Balancing coefficients to solve simultaneous equations	2	solve simultaneous linear equations by balancing coefficients.	
	26.4 Using simultaneous equations to solve problems	2	solve problems using simultaneous linear equations.	
	26.5 Linear inequalities	2	solve a simple linear inequality and represent it on a number line.	
27: Algebra: Non-linear graphs	27.1 Distance-time graphs	2	interpret distance-time graphs draw a graph of the depth of liquid as a container is filled.	Science
	27.2 Plotting quadratic graphs	2	draw and read values from quadratic graphs.	
	27.3 Solving quadratic equations by factorisation	2	solve a quadratic equation by factorisation.	
	27.4 The significant points of a quadratic curve	3	identify the significant points of a quadratic function graphically identify the roots of a quadratic function by solving a quadratic equation. identify the turning point of a quadratic function.	
	27.5 Cubic and reciprocal graphs	1	recognise and plot cubic and reciprocal graphs.	

Short Term Planning

Individual lesson resources and assessments to include high quality texts and images. Lessons should promote the explicit teaching of vocabulary and give opportunities to speak, read and write extensively using high-level subject vocabulary. Core numeracy skills are incorporated into lessons where they can be covered in a real world context.

Opportunities should be created to support the wider curriculum:

- PSHE / RSE
- Careers
- Citizenship and British Values
- Financial Education

Lesson planning is shared across the department however teachers will adapt lessons to match needs to students.

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