



Intent · Implementation · Impact



Curriculum Intent

The Parkside mathematics curriculum meets the statutory requirements of the National Curriculum in England. Our Mathematics Curriculum Learning Journey aims to develop pupils' mathematical confidence allowing them to solve a range of complex problems and critically analyse the world around them. We seek to expose them to the beauty of mathematics through a universal language which underpins many other areas of the curriculum. Mathematics fosters reasoning and problem solving, leading to mastery and logical thinking which builds pupils into well rounded and aspirational citizens of the future.

In order to be learned, ideas need to be understood deeply; they must not merely be passively received but must be worked on by the pupil, thought about, considered and discussed with others.

Our Mathematics Curriculum Learning Journey will vary the way a concept is initially presented to pupils. We will also carefully vary formative and summative assessments so that mechanical repetition is avoided and thinking is encouraged.

The philosophy of our Mathematics Curriculum Learning Journey is grounded in the quick and efficient recall of facts and procedures to allow pupils the flexibility to move between different contexts and representations of mathematics. Pupils should be able to connect new ideas to concepts that have already been understood. This ensures that, once understood and mastered, new ideas are used in next steps of learning.

Our Mathematics Curriculum Learning Journey is focused on pupils developing mastery of mathematics and involves:

- developing fluent knowledge, skills and understanding of mathematical methods and concepts
- acquiring, selecting and applying mathematical techniques to solve problems
- reasoning mathematically, making deductions and inferences and drawing conclusions
- comprehending, interpreting and communicating mathematical information in a variety of forms appropriate to the information and context.

Our Mathematics Curriculum Learning Journey is shared with pupils at the start of the topic so that they are aware of how their knowledge and skill will develop over time and how they will be assessed.

We are committed to ensuring our wonderful pupils develop their excitement, passion and joy for mathematics and, by the end of their Mathematics Curriculum Learning Journey, are able to move forward with confidence armed with the knowledge and skills they have developed.

J Havard – Head of Mathematics





Curriculum Implementation

The interconnected nature of mathematics is prevalent throughout the Mathematics Curriculum Learning Journey. Concepts are studied to build knowledge and then revisited in various contexts, creating links across topics.

Learning Journeys containing **Multiple Topics** containing **Multiple 'Can Do' knowledge Concepts**
delivered through **Individual Class Schemes of Learning**

The Mathematics Curriculum is split into five Learning Journeys, with one being delivered each year. Each Learning Journey is divided into a number of topics, with each topic containing a number of knowledge concepts that all pupils are expected to build, retain, recall and apply. These concepts are defined as **'Can Do' knowledge concepts**. Each topic is delivered through schemes of learning that are differentiated to each class and aim to build Foundation, Intermediate and/or Greater Depth knowledge and skills. The scheme of learning that pupils undertake centers on their prior knowledge that is assessed at the start of each topic. An example of this is as follows:

Mathematics Curriculum implementation Schemes of Learning overview				
	Class 1	Class 2	Class 3	Class 4
Topic	Greater Depth 'Can Do' Knowledge concepts	Greater Depth/Intermediate 'Can Do' Knowledge concepts	Intermediate/Foundation 'Can Do' Knowledge concepts	Intermediate/Foundation 'Can Do' Knowledge concepts

Please see **Annex 1: Key Stage 3 and Key Stage 4 Learning Journey** for the Greater Depth, Intermediate and Foundation 'Can Do' knowledge concepts for each topic.

Responsive Sequencing and Interleaved curriculum implementation

We understand that pupils are individuals and, at times, they build, retain and recall knowledge at different rates. As a result, once we have defined the topics we intend to teach throughout Each Learning Journey scheme of learning and the time it will take to do so, we ensure contingency time is built into each topic to revisit and address 'Can do' knowledge concept misconceptions and promote recall to determine if knowledge has been retained. Should an entire topic require further teaching, the entire scheme of learning is restructured to accommodate this. It is, therefore, not in our pupils' interests to plan a scheme of learning and implementation timeline at the beginning of an academic year and not adjust it throughout the year to address misconceptions and/or promote recall. An example of a responsive sequenced and interleaved topic structure is as follows.





Current Topic	
being studied that may also include interleaved Previous Topic 'Can Do' knowledge concepts	
15-minute Memory Platforms to promote recall and assess retention of 'Can Do' knowledge concepts revisited from previous topics.	Review Lessons to address misconceptions of 'Can Do' knowledge concepts from previous topics.

Our dynamic approach to curriculum implementation has been proven to immediately address pupils' misconceptions and build knowledge that can be retained and recalled in examination and wider contexts.

Consistent curriculum implementation through the delivery of 'Master Lessons'

To ensure all that pupils are taught to a consistent standard across all teaching groups each 'Can Do' knowledge concept has an associated exemplar 'Master Lesson' that clearly defines the knowledge that is expected to be built by pupils and the pedagogy that should be used to deliver it effectively to pupils.

'Rich activities' to build and recall knowledge through practical application of mathematical concepts.

The development of 'Rich Activities' to aid the understanding and recall of mathematical concepts through practical activities that allow pupils to visualize the concept being taught.

The use of assessment to inform responsive Sequencing, Interleaving and Teaching of the curriculum.

Formative and Summative assessments underpin this decision-making process.

Formative Assessments are used in every lesson and through homework to promote recall and assess retention of knowledge. Questioning through discussion, Memory Platforms and written examination style questions are used throughout each scheme of learning.

Summative Assessments are deep assessments that take place at the mid-point and at the end of each year's Learning Journey and follow the format of traditional GCSE style examinations. The mid-point and end-of-year summative assessments are written to assess 'Can Do' knowledge concepts delivered throughout the Learning Journey.

Disciplinary Literacy to move pupils from concrete to abstract thinkers

To move pupils from **concrete to abstract thinkers** and develop conceptual understanding we develop knowledge of specialised vocabulary and context cues through **Disciplinary Literacy**. We acknowledge that without competent and confident literacy skills, our pupils cannot flourish in the world; it is therefore our duty to prioritise the vital acquisition of high-quality communication skills. To fulfil our responsibility to tackle social disadvantage, we refuse to accept that social and economic status will determine our pupils' future and the acquisition of outstanding literacy skills is of paramount importance to eradicate this societal gap.

Teaching our Mathematics Curriculum Learning Journey involves employing a range of approaches that help pupils to develop a deep and secure knowledge and understanding of mathematics at each stage of their learning, so that by the end of every school year pupils will have acquired mastery of the mathematical facts and concepts they've been exposed to, enabling them to move on confidently and securely to more advanced concepts.





Curriculum Impact

The impact of our Mathematics Curriculum Learning Journey is defined through the accessibility pupils have to developing knowledge and the application of skills. This is determined through a number of measures:

☑ **Formative Reporting of Pupil Progress** are assessments that take place each lesson and include pupil questioning, discussion, the completion of examination style questions and the completion of homework.

☑ **Summative Reporting of Pupil Progress** are GCSE style examination paper assessments that are undertaken by pupils at the midpoint and end point of each Learning Journey. Each 'Can Do' knowledge concept is tested to determine what pupils '**Can do**' and where their knowledge needs to be further developed. Each 'Can Do' knowledge concept is colour-coded as **Red (not secure)**, **Amber (insecure)** or **Green (secure)** to demonstrate a pupil's depth of knowledge.

Parents/Carers receive a report following each mid and end point assessment to understand their child's current depth of knowledge and the support they need to further develop this knowledge both inside and outside of school.

☑ **In-lesson learning, participation and belonging** is measured by continually measuring pupil punctuality to lessons, rewards and sanctions, behaviour referrals, pupil voice and work-scrutiny. Our hope is that by continued positivity in these areas, our Mathematics Curriculum Learning Journeys are accessible and will, therefore, positively impact knowledge growth and skill application.

☑ **Knowledge and understanding of the 'Big Ideas' demonstrated through other GCSE/Vocational outcomes** is evident from the performance of pupils in sciences, geography, technology and enterprise.

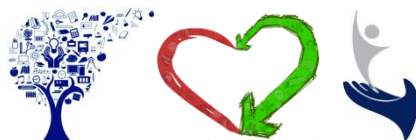
☑ **Post-16 Progression** has demonstrated a year-on-year increase in the amount of pupils moving on to study A-Level mathematics, further mathematics and statistics at sixth form schools and colleges.





Example Learning Journey **overview**

	Year 7	Year 8	Year 9	Year 10	Year 11
Term 1	Whole numbers and decimals	Whole numbers and decimals	Whole numbers and decimals	Basic number	Recap of Y10 with extensions
	Averages	Averages	Averages	Simplifying	Constructing and solving equations
	Fractions	Fractions	Fractions	Nth terms (sequences)	Reverse percentages
	Solving equations	Solving equations	Algebra	Fractions	Area of sectors and arc length
	Charts	Metric Units	Equations	Solving equations	Vectors
	Algebra	Area and Perimeter	Angles	Angles	Changing the subject
	Angles and shapes	Algebra	Decimals	Pythagoras	Plans and elevations
	Metric units	Angles and shapes	Standard Form	Probability	Relative frequency
	Area and perimeter	Working with decimals	Probability	Ratio	
	Properties of 2d shapes	Symmetry and tessellation	Ratio	Trigonometry	
Term 2				Percentages	
	Number	Percentages	Algebra	Expanding and Factorising	Expanding quadratics with varying
	Probability	Standard form	Area and Perimeter	Averages and Spread	'a' coefficients
	Proportion	Number	Graphs	Standard Form	Frequency polygons
	Percentages	Probability	Proportion	Pie Charts and Scatter diagrams	Congruency
	Ratio and proportion	Charts and graphs	Percentages	Speed/density (compound measures)	Venn diagrams
	Straight line graphs	Pythagoras' Theorem	Constructions	Similar shapes	Simultaneous equations
	Sequences	Compound measures	Sequences	Circles	
		Ratio	Graphs	Transformations	
		Straight line graphs	Charts		
Term 3		Sequences	Standard form 2		
		Time	Time		
			Congruence and similarity		
	Rearranging formulae	Simultaneous equations	Pythagoras' Theorem	Perimeter, area and volume	
	Circles	Volume of 3d shapes	Metric units	Graphs	
	Speed	Proportion	Scatter diagrams	Constructions	
	Transformations	Transformations	Volume and surface area	Prime factors, LCM, HCF	
	Volume of 3d shapes	Constructions	Simultaneous equations	Simultaneous Equations	
	Constructions	Equations	Bearings		
	Bearings	Converting units of volume and area	Compound measures		
	Symmetry and tessellation	Bearings	Transformations		
		Function machines	Rearranging Formulae		
		Venn diagrams			
		Properties of 2d shapes			



'Can Do' knowledge concepts

Mathematics Curriculum implementation

Knowledge concepts used to form Schemes of Learning

Topic	Foundation 'Can Do' knowledge concepts	Intermediate 'Can Do' knowledge concepts	Greater Depth 'Can Do' knowledge concepts
Basic Number	Add and subtract 1 and 2-digit numbers and explain my working	Multiply and divide whole numbers by numbers like 20, 300 etc and explain the effect	Multiply and divide by numbers of any size which give remainders and I can write the remainder as a decimal or a fraction
	Add and subtract 3-digit numbers and explain my working	Multiply whole numbers by 2 or 3 - digit whole numbers and explain my working	Apply addition, subtraction, multiplication and division to solve and analyse complex problems
	Remember and recall multiplication tables to 12 and explain the associated division facts	Multiply and divide decimals by 10, 100 and 1000 and explain the effect	Apply addition, subtraction, multiplication and division to investigate and analyse functional maths problems
	Multiply and divide whole numbers by 10, 100 and 1000 and explain the effect	Divide by 2-digit whole numbers where there is no remainder and explain my working	Analyse and explain results in functional maths problems
	Multiply and divide whole numbers by numbers like 20, 300 etc. and explain the effect	Multiply and divide by numbers of any size which give remainders and I can write the remainder as a decimal or a fraction	Analyse and explain results in complex functional maths problems
	Multiply whole numbers by 2 or 3 -digit whole numbers and explain my working	Apply addition, subtraction, multiplication and division to solve and analyse complex problems	
	Multiply and divide decimals by 10, 100 and 1000 and explain the effect		
Angles	Remember and explain what right, acute, obtuse and reflex angles are	Apply the sum of angles at a point, angles on a straight line, in a triangle and in a quadrilateral	Calculate exterior and interior angles of regular polygons
	Measure and explain how to draw acute and obtuse angles	Measure and explain how to draw reflex angles	Apply and analyse my knowledge of angles in regular polygons to calculate angles in irregular polygons



	Explain and describe angles using the three letter notation	Apply my knowledge of vertically opposite angles and explain what parallel and perpendicular lines are	Apply my knowledge of angles to solve any angle problem
	Apply the sum of angles at a point, angles on a straight line, in a triangle and in a quadrilateral	Apply my knowledge of angles to solve simple geometrical problems	Remember and apply circle theorems to calculate missing angles in problems
	Measure and explain how to draw reflex angles	Identify alternate and corresponding angles and apply these to find missing angles	
		Calculate exterior and interior angles of regular polygons	
Rounding, estimation and BIDMAS	Read, write and explain how to order whole numbers to 100	Explain how to round decimal numbers to any amount of decimal places	Determine upper/ lower bound of any number
	Explain how to estimate the length of everyday objects	Apply my knowledge of rounding to estimate answers to calculations and check the reasonableness of these answers by analysing the problem	Apply my knowledge of upper/ lower bounds to find the rounding error of a simple calculation
	Explain how to round whole numbers to the nearest 10, 100 and 1000 and decimals to the nearest whole number	Explain how to round numbers to any amount of significant figures	Take apart and evaluate a problem to find the rounding error of a complex calculation
	Explain how to round decimal numbers to any amount of decimal places	Explain and apply BIDMAS in simple questions	Apply upper / lower bounds to solve and justify a functional maths problem
	Explain and apply BIDMAS in simple questions	Explain and apply BIDMAS in questions including division, powers and roots	
		Apply my knowledge of rounding to estimate answers to calculations and check the reasonableness of these answers by analysing the problem	
		Determine upper/ lower bound of any number	
Algebra (Simplifying, expanding, factorising)	Remember the meaning of the symbols $= < > \leq \geq$	Apply my knowledge of inequalities to display and describe them on a number line	Create a factorised algebraic expression by taking out common factors
	Explain how to compare the size of numbers or answers to calculations using inequality signs	Create algebraic expressions from word sentences by explaining the meanings of algebraic	Create a simplified expression by expanding two linear expressions in the form $(x+n)$





		terms (e.g. ab means $a \times b$)	
	Explain how to simplify algebraic expressions by collecting like terms	Create simplified algebraic expressions by expanding a single bracket	Create and simplify an expression from a problem (e.g. perimeter/ area)
	Apply my knowledge of inequalities to display and describe them on a number line	Create a factorised algebraic expression by taking out common factors	Simplify expressions including those involving algebraic fractions including use of factorising
Nth terms and Sequences	Explain simple number patterns	Create/ find a rule for number sequences	Apply my knowledge of nth terms to explain if a term is in a sequence
	Create number sequences from patterns or pictures	Use the nth term to form a sequence and explain the meaning of the coefficient of n	Create the nth term of a quadratic sequence
	Create sequences using function machines	Create the nth term of a linear sequence	Take apart and evaluate the properties of quadratic sequences.
	Create/ find a rule for number sequences	Apply my knowledge of nth terms to explain if a term is in a sequence	Explain how I found the nth term of a quadratic sequence.
Averages and Spread	Explain which is the mode from a bar chart and pictogram	Find and explain the mean from data	Estimate and explain the mean from a grouped frequency table
	Find and explain the mode and range from data	Find and explain the modal class for grouped data	Apply and analyse data presented in grouped frequency tables using mean, mode and/ or range
	Find and explain the median from data	Analyse data using mean, mode, median and/or range	Take apart and evaluate averages and other results in statistical problems.
	Find and explain the mean from data	Find and explain the mean from a frequency table	Draw cumulative frequency curves and calculate median, quartiles and interquartile range from frequency curve
	Find and explain the modal class for grouped data	Analyse data in discrete frequency tables using mean, mode and/or range	
Properties of Shapes	Remember the names of quadrilaterals such as trapezium, parallelogram	Remember facts about special quadrilaterals (e.g. how many parallel sides, lines of symmetry)	Create draw front, side and plan elevations of 3D shapes onto squared paper
	Explain the properties of 2D shapes using their line and rotational symmetry	Remember and explain what congruent shapes are	Apply and analyse similar shapes to find missing lengths
	Remember facts about special quadrilaterals (e.g. how many parallel sides, lines of symmetry)	Create draw front, side and plan elevations of 3D shapes onto squared paper	Prove and explain why shapes are congruent or similar
	Remember the names of regular polygons up to 10 sided and their associated symmetry	Create diagrams of cubes and cuboids on isometric paper	Take apart and evaluate problems involving similar shapes





Straight line Graphs	Explain and use coordinates in the first quadrant	Create diagonal lines using 'y = x and y = -x'	Apply and analyse the meaning of m and c to create an equation of a straight line
	Explain and use coordinates in all four quadrants	Create other lines through the origin such as y = 2x, y = -3x	Apply and analyse graphs and equations of parallel lines
	Create vertical and horizontal lines using 'x = a and y = a'	Create linear graphs from equations of the form y = mx + c	Create graphs from quadratic, cubic and reciprocal equations
	Create diagonal lines using 'y = x and y = -x'	Remember and explain that equations of the form y = mx + c correspond to straight-line graphs	Use linear graphs to find solutions of simultaneous linear equations
		Apply and analyse the meaning of m and c to create an equation of a straight line	
Whole numbers and decimals	Remember and recognise odd and even numbers	Remember and explain how to find factors	Explain and calculate with negative indices
	Explain the difference between odd and even numbers	Remember and explain what prime, square and cube numbers are	Apply my knowledge of powers to write any number in standard form
	Remember and explain how to find multiples	Explain how to find highest common factors and lowest common multiples	Create a number in standard form after multiplying and dividing numbers in standard form.
	Remember and explain how to find factors	Explain how to and apply my knowledge of factors to find prime factors using a factor tree	
	Remember and explain what prime, square and cube numbers are	Explain and recognise numbers written in index form	
	Explain how to find highest common factors and lowest common multiples	Create a venn diagram to find LCM and HCF of numbers	
		Remember and use the rules for multiplication and division of integer powers and raising one power to another.	
		Remember and explain how to find multiples	
		Explain how to find highest common factors and lowest common multiples	





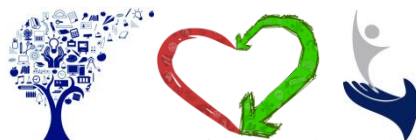
Perimeter and Area	Explain what the word perimeter means and calculate the perimeter of simple shapes drawn on squared paper	Explain how to find the perimeter of rectangles and shapes made from rectangles	Remember the formula for calculating the length of an arc and apply it calculate the lengths of circular arcs
	Explain what the word area means and find areas of simple shapes by counting squares and part squares	Remember and apply the formula for the circumference of a circle	Remember and apply the formula for finding the surface area of a sphere
	Remember the formula for finding the area of a rectangle and apply it to find the area of rectangles	Remember and apply the formula for the circumference of a circle and leave my answer in terms of pi	Remember and apply formulas for finding the surface area of a cone and cylinder
	Remember the formula for finding the area of a rectangle and apply it to find the area of compound shapes made from rectangles	Apply my knowledge of circumference to calculate perimeters of a semi-circle	Take apart and evaluate problems involving surface area
	I can find the perimeter of rectangles and shapes made from rectangles	Remember and apply the formulae for the area of a triangle, parallelogram and trapezium	I can calculate the surface area of a cylinder
	I know and can use the formula for the circumference of a circle	Apply and analyse a compound shape made from triangles or quadrilaterals to find its perimeter	I can solve problems involving surface area of prisms.
	I can find the area of rectangles and shapes made from rectangles	Remember and apply the formula for the area of a circle	I can apply my knowledge of area and perimeter to solve problems in a different context
	I can use the formulae for the area of a triangle	Explain how to calculate the surface area of a 3D shape using nets	
	I can derive and use the formulae for the area of a parallelogram and trapezium	Remember and apply the formula for finding the area of a sector	
	I know and can use the formula for the area of a circle	I can calculate perimeters of semi circles	
		I can calculate the lengths of circular arcs	
		I can calculate the surface area of cubes and cuboids	
		I can calculate areas of composite shapes involving circles	
		I can calculate areas of sectors	





Whole numbers and decimals	Explain place value in decimal notation	Explain the order of decimals up to 3 decimal places	Take apart and evaluate problems involving negative numbers and decimals in a range of different contexts
	Explain negative numbers in context such as temperature	Explain how to multiply and divide with decimals	
	Explain the order negative numbers on a number line	Explain how to multiply and divide positive and negative integers and remember the rules where signs are combined	
	Explain how to add and subtract decimals (including where the decimal places vary)	Apply and analyse all calculations involving negatives and decimals	
	Explain how to add and subtract with negative numbers	Take apart and evaluate problems involving negative numbers and decimals in a range of different contexts	
	Explain how to add and subtract with negative numbers and remember the rules where signs are combined		
	Explain the order of decimals up to 3 decimal places		
	Explain how to multiply and divide with decimals		
Charts	Create simple bar graphs and pictograms	Create pie charts from frequency tables	Take apart and evaluate data given in diagrams and use it to compare the data
	Apply and analyse data given in simple bar graphs and pictograms	Apply and analyse data given in a pie chart	Construct box plots from discrete data (not in frequency table)
	Create two way table and Venn and Carroll diagrams to record data	Explain simple mathematical relationships using scatter graphs	Apply and analyse data from box plots
	I can interpret and solve problems involving simple line graphs and pictograms	Apply and analyse data in a scatter graph and draw a line of best fit and to make predictions	I can justify the choice of statistical representation chosen
	I can use Venn and Carroll diagrams to record data	Apply and analyse data from any statistical diagram and use them to find averages	I can construct histograms with equal and unequal class intervals
	I can design a data collection sheet	I can describe simple mathematical relationships	I can understand sampling and its deficiencies





		between two variables and illustrate using scatter graphs	
	I can interpret and construct graphs and diagrams to represent ungrouped discrete data including pie charts and frequency tables	I can draw estimated lines of best fit when using scatter graphs and make predictions	I can construct and interpret box plots and use these to compare two distributions.
		I can communicate interpretations and results using appropriate tables, graphs and diagrams to support	
		I can design a questionnaire and justify why some questions should not be used	
		I can examine critically the results of a statistical enquiry	
Fractions	Explain and use fractions to describe parts of a shape	Explain how to express smaller whole numbers as fractions of larger ones	Take apart and evaluate any fraction problems in different contexts
	Remember and apply the rule that to add or subtract fractions the denominator must be the same	Remember and apply the rules for multiplying and dividing fractions	Create a fraction from a recurring decimal
	Create simplified fractions and recognise when fractions are equivalent	Apply knowledge of equivalent fractions to compare, add and subtract fractions where the denominator is not the same	Apply and analyse any recurring decimal and fully explain how it can be changed into a fraction
	Create improper fractions from mixed numbers and vice versa	Take apart and evaluate any fraction problems in different contexts	
	Explain and apply rules used to calculate fractions of a quantity		
	Explain how to express smaller whole numbers as fractions of larger ones		
Volume	Remember that you can count cubes to find the volume of a cube or cuboid	Apply a formula to find the volume of a cuboid	Apply a formula to find the volume of spheres, pyramids and cones
	Explain how to find the volume of a solid shape by counting cubes and part cubes	Apply a formula to find the volume of prisms	Apply a formula to find the volume of a frustrum
	Remember the formula for the volume of a cuboid	Apply and use the formula to find the volume of a cylinder	Analyse an expression or formula and explain whether it represents a length, area or volume
	Apply a formula to find the volume of a cuboid	Apply a formula to find the volume of spheres,	Remember and apply a formula to calculate the





		pyramids and cones	volume of a sphere, pyramid and a cone.
Percentages	Remember that a % is out of 100	Explain and demonstrate how to calculate percentages of a quantity without a calculator (e.g 50%, 10%, 5%)	Apply my knowledge of percentages to solve problems involving simple interest
	Remember equivalence between simple fractions, decimals and percentages ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{10}$, $\frac{3}{4}$)	Explain and demonstrate how to calculate percentages of a quantity using a calculator	Apply and analyse problems involving percentage increase and decrease
	Explain the equivalence between simple fractions, decimals and percentages ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{10}$, $\frac{3}{4}$)	Explain the equivalence between any fraction, decimal and % and convert between these	Apply and analyse problems involving compound interest
	Explain and demonstrate how to calculate percentages of a quantity without a calculator (e.g 50%, 10%, 5%)	Apply my knowledge of percentages to solve problems involving simple interest	Apply percentages know to solve reverse percentages problems
Metric units and Compound Measures	Explain how to and demonstrate how to draw a and measure a line using cm and mm accurately	Analyse map scales and scale drawings and use this to solve problems	Remember approximate conversions between metric and imperial units
	Explain how to read simple scales on a range of instruments	Remember the formulae connecting Speed, Distance and time and use these to solve a simple problems	Explain how to convert between metric and imperial units using approximations
	Remember metric unit conversions and use this convert one metric unit to another	Apply my knowledge of units to solve problems involving the conversion of metric units including converting areas and volumes	Analyse exchange rates and use these convert between units of currency
	Analyse map scales and scale drawings and use this to solve problems	Remember approximate conversions between metric and imperial units	Solve and explain results of problems involving speed, distance and time
			Solve and explain results of problems involving speed, density and pressure
Probability	Remember and use the terms <i>likely</i> , <i>equally likely</i> , <i>fair</i> , <i>unfair</i> , <i>certain</i> when describing chance or likelihood	I can understand that the probabilities of all possible outcomes sum to 1	Analyse results and explain whether they are fair or biased and find an expected frequency
	Remember that all probabilities are between 0 and 1 and place events on a probability scale	Explain how to and list all outcomes	Create frequency trees to record results
	Explain how to calculate probability based on equally likely outcomes	Analyse results and use these to calculate relative frequency	Apply the AND/ OR rule to solve problems involving probability, including using tree diagrams





	I can understand that the probabilities of all possible outcomes sum to 1	Analyse results and explain whether they are fair or biased and find an expected frequency	Enumerate sets and unions/intersections of sets using Venn diagrams
			Generate theoretical sample spaces for single and combined events
			Work out the probabilities of combined events when the probability of each event changes depending on the outcome of the previous event
Angles / congruency / Pythagoras / Trigonometry	Remember the names of the different types of triangles	Apply standard conventions for labelling the sides and angles of triangle ABC	Apply and analyse congruent triangles (SSS, AAS, SAS, RHS)
	Identify the different types of triangles	Remember and be able to identify the hypotenuse on right angled triangles	Apply Pythagoras' Theorem when solving more complex problems
	Remember facts about special triangles (e.g. how many parallel sides, lines of symmetry)	Apply Pythagoras' Theorem in simple problems	Apply Pythagoras' Theorem to 3 dimensional problems
	Apply standard conventions for labelling the sides and angles of triangle ABC	Apply and analyse congruent triangles (SSS, AAS, SAS, RHS)	Apply SOCAHTOA to calculate a missing angle or side in a right-angled triangle using trigonometry
Ratio	Remember the notation used to represent ratios	Explain and demonstrate how to write a ratio as a fraction	Apply my knowledge of ratio to solve problems using ratio in appropriate situations e.g. the difference between two parts
	Remember and use ratio notation to describe parts of a shape shaded	Explain and demonstrate how to reduce a ratio expressed in different units to its simplest form or to the form 1:n	Apply and analyse data to create equations using the concept of direct and inverse proportion
	Explain and demonstrate how to reduce a ratio to its simplest form	Analyse information and divide a given quantity into a given ratio	Take apart and evaluate problems involving direct and inverse proportion
	Explain and demonstrate how to write a ratio as a fraction	Apply my knowledge of ratio to solve problems using ratio in appropriate situations e.g. the difference between two parts	Take apart and evaluate problems involving direct and inverse proportion including powers
Constructions	Explain how to and demonstrate how to draw and measure a line using cm and mm accurately	Create 2D shapes using given dimensions that include an angle	Create the locus of a point that moves to the four different loci rules
	Create simple shapes accurately measuring in cm and mm	Create constructions of triangles (ASA, SSS, SAS)	Create angles of sizes 60 and 45 degrees using ruler and compass only
	Explain and demonstrate how to use a protractor to	Create a perpendicular bisector of a straight line,	Take apart to evaluate problems in context using constructions and loci





	draw and measure angles accurately	angle bisectors and perpendiculars to a line	
	Create 2D shapes using given dimensions that include an angle	Create the locus of a point that moves to the four different loci rules	Take apart to evaluate problem that involves finding a locus that satisfies more than one rule
Solving Equations / Simultaneous Equations	Explain what number is needed to complete a simple addition or subtraction equation (e.g $1 + * = 5$)	Apply my knowledge of inverse functions to solve simple two step linear equations	Create formulae and equations using shape properties
	Explain and use simple functions to produce output from inputs	Apply my knowledge of algebra to linear equations with unknowns on both sides	Explain and use algebraic methods to solve simultaneous linear equations
	Apply my knowledge of algebra to substitute values into simple formulae	Create and solve linear equations with unknowns on both sides	Create and solve simultaneous linear equations using algebraic methods
	Apply my knowledge of inverse functions to solve simple two step linear equations	Create formulae and equations using shape properties	Create and solve simultaneous equations from a practical context and justify my solutions
			Solve a quadratic equation by factorisation
Transformations	Explain and identify mirror lines on shapes	Create transformed 2D shapes by rotating about a given point	Create similar shapes by enlargement using a positive whole number scale factor using a centre of enlargement
	Explain and calculate order of rotational symmetry	Create transformed 2D shapes by translating using a column vector	Explain and describe fully any type of transformation that has been drawn
	Create transformed 2D shapes by reflecting in vertical and horizontal lines on a graph	Create similar shapes by enlargement using a positive whole number scale factor anywhere on a coordinate grid	Create a transformed 2D shape using a combination of transformations
	Create transformed 2D shapes by rotating about a given point	Create transformed 2D shapes by reflecting in a diagonal mirror line on a graph	Perform and interpret enlargements with a negative scale factor
	Create transformed 2D shapes by translating using a column vector	Create similar shapes by enlargement using a positive whole number scale factor using a centre of enlargement	Identify all the planes of symmetry on a 3D shape

