



# ATAM Academy Mathematics Curriculum overview



Year Group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<b>N</b>	<p><b>Number</b> – react to changes of an amount</p> <p><b>Explore space</b> – roll, move, stretch</p> <p>Explore different shaped objects</p> <p><b>Repeated actions</b> in songs and rhymes</p> <p><b>Respond to size</b></p>	<p><b>Awareness of number</b> names through nursery rhymes</p> <p><b>Explore space</b> - position and direction</p> <p><b>Repeated Patterns</b></p> <p><b>Repeated actions</b> in songs and rhymes</p> <p><b>Measures</b> – emptying containers</p>	<p><b>Number</b> – counting, comparison, cardinality</p> <p><b>Spatial awareness</b> – filling/emptying containers</p> <p><b>Shape</b> – fitting shapes, jigsaw puzzles, building structures with blocks</p> <p><b>Pattern</b> – predict patterns</p> <p>Measure - routines</p>	<p><b>Number</b> – counting, comparison, cardinality</p> <p><b>Spatial &amp; positional language</b></p> <p><b>Shape</b> – Make simple constructions</p> <p><b>Patterns</b> of everyday routines</p> <p><b>Measures</b> – size, length, weight and capacity</p> <p><b>Measures</b> – time – future/past, times of the day</p>	<p><b>Number</b> – counting, comparison, cardinality, composition</p> <p><b>Spatial Awareness</b>- predicts, moves, rotates objects to fit</p> <p><b>Shape</b> – naming, similarities and differences, combining shapes to make new 2d/3d shapes</p> <p><b>Patterns in sounds</b>, objects, games and stories dance and movement, predicting what comes next</p> <p><b>Measures</b> – comparison words, recall sequence of events</p>	<p><b>Number</b> – counting, comparison, cardinality, composition</p> <p><b>Spatial Awareness</b>- give, follow directions, map making</p> <p><b>Shape</b> – problem solving</p> <p><b>Pattern</b> – pattern rule, repeat,</p> <p><b>Measures</b>- Comparison, fairness, accuracy</p> <p><b>Measure time</b> with timers, calendars</p>
<b>R</b>	<p><b>Getting to Know you</b> - Settling in:</p> <p>Match Key times of the day</p> <p>Explore continuous provision inside and out</p> <p>Use positional Language</p> <p><b>Just like Me!</b></p> <p><b>Match</b> - object, heights, sets</p> <p><b>Sort</b> - identify and explain what is the same and different about objects</p> <p><b>Compare Amounts</b> - more, most, fewer</p> <p><b>Compare Size, Mass &amp; Capacity</b> of objects</p> <p><b>Exploring Pattern</b> - different types of patterns including shapes and sounds</p>	<p><b>It's me 1 2 3!</b></p> <p><b>Representing, Comparing and Composition</b> of 1,2 and 3</p> <p><b>Circles</b> (curved edges)and <b>Triangles</b> (3 straight sides)</p> <p><b>Positional Language/Spatial Awareness</b> - how items are positioned in relation to others</p> <p><b>Light and Dark</b></p> <p><b>Representing Numbers to 5.</b></p> <p><b>One More or Less</b> from a group of up to 5</p> <p><b>Shapes with 4 Sides</b> - identify them from a group</p> <p><b>Time</b> - describe when events are happening and explain their daily routine in order</p>	<p><b>Alive in 5!</b></p> <p><b>Introducing zero</b> - know that '0' is zero.</p> <p><b>comparing numbers 0-5</b>, quantities larger, smaller or the same.</p> <p><b>Composition of 4 &amp; 5</b> - group 4 or 5 objects,</p> <p><b>Compare Mass and capacity:</b> order objects, use balance to say which object is heavier or lighter, taller or thinner, full, half, nearly full etc.</p> <p><b>Growing 6,7,8</b></p> <p><b>Count, represent, arrange and subitise</b> 6, 7 and 8 items into groups</p> <p><b>Combining 2 amounts</b> additively to find a total</p> <p><b>Length &amp; Height:</b> describe length and height using the words taller etc and make comparisons</p>	<p><b>Building 9 and 10</b></p> <p><b>Count,represent, arrange and subitise</b> 9 &amp; 10 in different ways.</p> <p><b>Comparing numbers and Bonds to 10</b> - using items and real-life context.</p> <p><b>3d-shapes</b> - predict whether an item will stack (cube, cuboid, cylinder, prism) or roll smoothly (circle based pyramid, sphere, cylinder)</p> <p><b>Pattern</b> - create, describe and continue patterns.</p> <p><b>Building numbers beyond 10</b> (to 20) including the identification of numbers.</p>	<p><b>To 20 and beyond</b></p> <p><b>Identify written numbers from 11-20 and build</b> the numbers from 11-20 using a range of resources</p> <p><b>Counting Patterns Beyond 10</b> both forwards and backwards from any starting point</p> <p><b>Spatial Reasoning</b> using key vocabulary to direct including the use of gestures.</p> <p><b>Adding More</b> - Describe change from addition Use the "first, then, now" sentence structure to describe</p> <p><b>Taking Away</b> - Describe quantity of items has changed and decreased or got smaller if items have been taken away</p> <p>Use the "first, then, now" sentence structure to describe</p> <p><b>Spatial Reasoning (2):</b> combine shapes to make new shapes and describe them, such as</p>	<p><b>Find my Pattern</b></p> <p><b>Doubling:</b> use 10 frames to double a number</p> <p><b>Sharing &amp; Grouping:</b> to share and give an amount of objects.</p> <p><b>Even and odd:</b> group a set of objects into pairs. Split groups into equal size</p> <p><b>Spatial Reasoning (3)</b> Create a reflection of an image replicate a construction made from multi-link cubes</p> <p><b>On the Move</b>-Deepening Understanding of Number: Problem solving - thinking about how our maths knowledge can be represented in different situations</p> <p><b>Patterns and Relationships:</b> exploring numbers and shapes.</p>



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			<p><b>Time:</b> order and sequence important times in the day. Describe significant events in their lives and how long ago they happened - current and near past and near future.</p>		combine two identical right-angled triangles to make a square or rectangle	<p><b>Spatial Reasoning</b> and using basic maps i.e. a room or another familiar place.</p>
1	<p><b>Place Value (Within 10)</b> Sort, Count and represent objects Recognise numbers as words Count on, 1 more, 1 less and compare groups</p>	<p><b>Addition and Subtraction (Within 10):</b> number bonds to 10, fact families, addition and subtraction on a number line.</p> <p><b>Shape:</b> Recognising, naming and sorting 2D and 3D shapes</p>	<p><b>Place Value (Within 20):</b> count, order, and compare numbers within 20. 1 more 1 less.</p> <p><b>Addition and Subtraction (Within 20):</b> number bonds to 20, doubles, adding ones, subtraction (finding the difference)</p>	<p><b>Place value (Within 50):</b> counting to 50, estimating numbers on a numberline. Partition into tens and ones.</p> <p><b>Length and Height:</b> compare and measure length and height using objects. Measure lengths in cm.</p> <p><b>Mass and Volume:</b> What is heavier and lighter? Compare and measure mass, capacity and volume.</p>	<p><b>Multiplication and division:</b> count in 2, 5, and 10's. Recognise and make equal groups, sharing equal groups. Make arrays.</p> <p><b>Fractions:</b> Wholes, halves and quarters</p> <p><b>Position and direction:</b> describe position using forward, backwards, left, right above and below.</p>	<p><b>Place value (Within 100):</b> count 50 to 100. Compare any two numbers. recognise numbers 1-100 on a number line.</p> <p><b>Money:</b> Recognising and counting coins and notes.</p> <p><b>Time:</b> Before, after, days of the week, months of the year.</p>
2	<p><b>Place value:</b> recognise, order, and compare numbers to 100. Recognise tens and ones. count in 2, 5 and 10's.</p> <p><b>Addition and Subtraction (Within 100):</b> Fact families, bonds to 100, 10 more, 10 less.</p>	<p><b>Addition and Subtraction (Within 100):</b> Adding and subtracting 2 two digit numbers cross and not crossing 10. adding 3 1-digit numbers.</p> <p><b>Properties of Shape:</b> Recognise and describe 2-D and 3-D shapes. Lines of symmetry.</p>	<p><b>Multiplication and Division:</b> Recognise and make equal groups (grouping and sharing), 2,5 and 10 times table, odd and even numbers, dividing by 2 and 10.</p> <p><b>Money:</b> Count money in pence, pounds and coins. Making an amount. Finding change.</p>	<p><b>Fractions:</b> Fractions thirds, unit and non-unit fractions, <math>\frac{1}{4}</math> recognising equivalent fractions.</p> <p><b>Time:</b> O'clock, half past, past an hour, 5 minute intervals.</p> <p><b>Position and Direction:</b> language of movement, describe a turn.</p>	<p><b>Length and Height:</b> Measure, order and compare height and length.</p> <p><b>Mass, Capacity and Temperature:</b> compare mass, measure in grams and kilograms.</p>	<p><b>Consolidation and Transition Projects</b></p>
3	<p><b>Place value (Numbers to 1000):</b> represent and partition numbers to 1,000. Compare and order numbers to 1,000</p> <p><b>Addition and Subtraction (within 1000):</b> Add and subtract 1, 10 and 100. Add and subtract across 10.</p>	<p><b>Addition and Subtraction:</b> Add and subtract 2 digit and 3 digit numbers. Inverse operation. Estimate answers.</p> <p><b>Multiplication and Division (3s, 4s, 8s):</b> Multiples of 2,5 and 10. Multiply and divide by 3, 4 and 8. Sharing and grouping.</p>	<p><b>Multiplication and Division (2 digit by 1 digit):</b> Multiply and divide with exchange and no exchange. Dividing with remainder.</p> <p><b>Length and Perimeter:</b> Compare and order length, Measure in metres, millimetres and centimetres.</p>	<p><b>Fractions:</b> Compare and order fractions, understand the numerators non unit of fraction, fraction and scales</p> <p><b>Mass and Capacity:</b> Measure, add and subtract</p>	<p><b>Fractions:</b> Tenths, fractions on a number line, fractions of amounts, equivalent fractions, compare, order, add, subtract</p> <p><b>Money:</b> Convert £s and pence</p> <p><b>Time and Roman numerals:</b> days and hours, hours and</p>	<p><b>Properties of shape:</b> Right angles, parallel and perpendicular, 2D and 3D shapes</p> <p><b>Statistics:</b> Interpret and draw pictograms and bar charts.</p>



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	ACADEMIES TRUST		Calculate the perimeter of a shape.		minutes - use start and end times	
4	<p><b>Place Value:</b> Rounding, 1000 more or less, numbers up to 10000, negatives, Roman Numerals</p> <p><b>Addition and Subtraction:</b> Adding powers of 10, adding and subtracting 4 digit numbers with exchange, estimating</p>	<p><b>Area:</b> What is area, counting squares, comparing</p> <p><b>Multiplication and Division:</b> By powers of 10, 6s, 9s and 7s</p>	<p><b>Multiplication and Division:</b> 11s and 12s, 3 digit by 1 digit, factors</p> <p><b>Length and Perimeter:</b> Kilometres, perimeter of rectangles and rectilinear shapes</p>	<p><b>Fractions:</b> Equivalence, fractions &gt; 1, adding and subtracting including mixed numbers with the same denominators</p> <p><b>Decimals:</b> Tenths, 1 and 2 digit divide by 10, hundredths, dividing by 100</p>	<p><b>Decimals:</b> Writing, comparing, ordering, rounding</p> <p><b>Money:</b> Ordering, estimating, four operations</p> <p><b>Time:</b> Hours, mins, secs</p>	<p><b>Properties of shape:</b> Angles, triangles, quadrilaterals, symmetry</p> <p><b>Statistics:</b> Interpret charts, line graphs introduction</p> <p><b>Position and direction:</b> Movement on a grid</p>

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5	<p><b>Place Value (Numbers to 1,000,000):</b> Read, write, compare and order numbers to 100,000. Rounding. Roman numerals to 1,000</p> <p><b>Addition and Subtraction:</b> More than 4 digits, rounding to estimate, multi-step problems</p>	<p><b>Multiplication and Division:</b> multiples, factors, primes, squares, cubes</p> <p><b>Fractions</b> Fractions equivalent to a unit fraction, fractions equivalent to a non-unit fraction, Recognise equivalent fraction</p>	<p><b>Multiplication and Division:</b> 4 digits by 1 digit, 2,3,4 digit by 2 digit, remainders</p> <p><b>Fractions:</b> Multiply a unit fraction by an integer, Multiply a non-unit fraction by an integer, Multiply a mixed number by an integer, Fraction of an amount</p>	<p><b>Decimals and Percentages:</b> Thousandths, percentages, equivalence</p> <p><b>Perimeter and Area:</b> Measure, calculate, area of rectangles and other shapes</p> <p><b>Statistics:</b> Line graphs: drawn and interpret, tables (Read and interpret, two-way and time</p>	<p><b>Properties of shape:</b> Measuring angles and drawing lines and angles, angles on a straight line and around a point, polygons</p> <p><b>Position and Shape:</b> Coordinates in first quadrant, translation, reflections</p>	<p><b>Decimals:</b> Adding and subtracting, multiplying and dividing by powers of 10</p> <p><b>Negative Numbers</b></p> <p><b>Converting units:</b> Kg, km, mm, ml, metric and imperial, time</p> <p><b>Volume:</b> Compare, estimate</p>
6	<p><b>Place Value:</b> Read and write numbers to 10,000,000, negative numbers. Power of 10</p> <p><b>The Four Operations:</b> 4 digit times 2 digit, short division, long division, order of, common multiples and factors</p>	<p><b>Fractions:</b> Simplify, compare and order, multiply fractions by fractions, divide fraction by integer</p> <p><b>Converting Units:</b> Convert metric measures, Miles and kilometres, Imperial measures</p>	<p><b>Ratio:</b> Ratio and fractions, scale factors, calculation</p> <p><b>Algebra:</b> ax+b, expressions, substitution, formulae, forming and solving equations</p> <p><b>Decimals:</b> Three dp, multiply and divide by powers of 10, multiply and divide by</p>	<p><b>Fractions, Decimals, Percentages:</b> Fractions to Percentages, percentage of amounts, order FDP</p> <p><b>Perimeter, Area and Volume:</b> Area or triangle, area of parallelogram, volume of cuboid</p> <p><b>Statistics:</b> Circles and Pie Charts, Mean</p>	<p><b>Properties of shape:</b> Vertically opposite angles, angles in a triangle, angles in quadrilaterals, angles in polygons, nets</p> <p><b>Position and direction:</b> All four quadrants</p>	<p><b>Consolidation and Transition Projects</b></p>





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			integers, convert fraction to decimal			
7	<p><b>Place Value:</b> Base 10, integers and decimals</p> <p><b>Properties of Arithmetic:</b> Fact families, efficient calculation methods such as Decomposition and Distributivity</p> <p><b>Factors and Multiples:</b> Pairs, primes, squares and roots</p> <p><b>Order of Operations:</b> Priority, Brackets, Indices</p>	<p><b>Positive and negative numbers:</b> Order, Compare and Calculating using negatives with the four operations</p> <p><b>Expressions, equations and inequalities:</b> Collect like terms, expand brackets, factorise basic linear expressions, forming and exploring equations and inequalities</p>	<p><b>Angles:</b> Describe, measure, draw, calculate basic angles. Exploring angles on Parallel lines, triangles and quadrilaterals</p> <p><b>Classifying 2-D shapes:</b> Properties (KS2 link), Triangles, Quadrilaterals, Symmetry, Parallel sides and diagonals</p> <p><b>Constructing triangles and quadrilaterals:</b> Exploring circles, constructing triangles ASA, SAS (Angle/Side) and quadrilaterals</p>	<p><b>Coordinates:</b> Axes, coordinates, horizontal and vertical lines, introduction of gradient, parallel and perpendicular lines</p> <p><b>Area of 2-D shapes:</b> Describing area and perimeter, combining shapes, triangles and parallelograms</p> <p><b>Transforming 2-D figures:</b> Translations, Enlargements, Reflections and Rotation</p>	<p><b>Prime Factor Decomposition:</b> Build on factors, multiples, squares and primes - Prime building blocks and prime factor decomposition and use them to find highest common factors and lowest common multiples</p> <p><b>Conceptualising and comparing fractions:</b> Represent, compare and equivalence built upon to convert between mixed numbers, decimals to fractions and Order decimals and fractions</p> <p><b>Manipulating and calculating with fractions:</b> Fractions of amounts, four operations, inverse operations and the reciprocal (used in division), add and subtract fractions and decimals</p>	<p><b>Ratio:</b> Compare, simplify, scale, constant of proportionality and begin to represent part:part and part:whole where fractions are involved</p> <p><b>Percentages:</b> Explore percentages, FDP, Percentages of amounts, increase and decrease and the use of multipliers with a calculator.</p>
8	<p><b>Sequences:</b> Building from the basics to finding the nth term and exploring square, cubic, geometric and quadratic sequences</p> <p><b>Forming and solving equations:</b> Algebraic manipulation including solving linear equations with negative coefficients and unknowns on both sides, and applying algebraic reasoning in geometric contexts</p> <p><b>Forming and solving inequalities:</b></p>	<p><b>Linear graphs:</b> Build on Y7 to coordinate grid geometry, inequalities, lattice points, linear graphs, gradient and equation of a line including parallel and perpendicular lines</p> <p><b>Accuracy and estimation:</b> Rounding to decimal and significant figures and using this knowledge for estimations</p>	<p><b>Ratio Review:</b> Parts and wholes, equivalence, sharing and explore equal proportions</p> <p><b>Real Life Graphs and Rate of Change:</b> Representing, sketching and developing knowledge of speed, distance and displacement graphs in relation to time</p> <p><b>Direct and Inverse Proportion:</b> Revisit key concepts such as scale factor and constant of proportionality. Continue work with direct proportion and learn methods for finding</p>	<p><b>Statistics</b></p> <p><b>Univariate data:</b> Types of data, data collection, representation and comparison of representations. Mean - using the mean, finding missing values and mean from a table. Mode, median and range</p> <p><b>Bivariate data:</b> Understanding and representing bivariate data, explore correlation, lines of best fit, causation and correlation, finding median and range from scatter graphs</p>	<p><b>Angles in Polygons:</b> Polygons - what are they? Interior angles - building from triangles, compound triangles, sum interior angles and exterior angles including the use of angle notation.</p> <p><b>Bearings:</b> Introduction to bearings, bearings on grids, finding missing angles, intersections and generalisation</p>	<p><b>Circles:</b> Anatomy, construction, circumference, Area of circles, sectors and compound shapes</p> <p><b>Volume and Surface Area of Prisms:</b> Investigate properties of shapes - faces, edges, vertices, nets and surface area followed by volume (cubes, cuboids, prisms and cylinders).</p>



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	Understanding inequalities, forming and solving (linked to equations)		missing values with non-integer scale factors and constants of proportionality			
9	<p><b>Fractions, Decimals and Percentages (FDP) Review:</b> Revisit number work from KS2 and KS3 to refresh their understanding of the interconnection of methods of calculation for fractions, decimals and percentage in preparation for work on probability in the next unit.</p> <p><b>Probability:</b> Introduction to theoretical probability in a variety of contexts and with a variety of representations. Combined events are considered with the use of sample spaces, two-way tables, frequency and probability tree diagrams. Relative frequency and explore bias</p> <p><b>Sets, Venns and Sample Space Diagrams:</b> Introduction to set notation - intersections, unions, universal set. Probability in set notation</p>	<p><b>Solving Linear Simultaneous Equations Algebraically:</b> Revisit Linear equations, add and subtract equations and move on to solving simultaneous equations using a range of methods including substitution and rearranging.</p> <p><b>Solving Linear Simultaneous Equations Graphically:</b> Connecting to linear graphs, explore approaches to finding solutions graphically, visualising, multiple solutions as well as understanding parallel lines (no intersection)</p>	<p><b>Angle Review:</b> Revisit angle theorems to calculate missing angles using longer chains of reasoning, justifying their deductions. Opportunities exist throughout the unit for estimating, naming, measuring and drawing angles using a protractor</p> <p><b>Constructions, Congruence and Loci</b> Introduction to loci and use of properties of circles to find the locus of points that are a specific distance from a point. Construct perpendicular bisectors, bisect angles, construction of angles and triangles, understand congruence</p> <p><b>Pythagoras' Theorem:</b> Explore Pythagoras's theorem - understand its connection to right angle triangles, use the theorem to find missing sides and identify hidden Pythagoras</p>	<p><b>Ratio Review:</b> Revisit with a focus on understanding the difference between part : part and part : whole relationships, representing those relationships as fractions, using the constant of proportionality and scale factor to find equivalent ratios</p> <p><b>Similarity and Enlargement</b> Introduction to the idea of similarity in the context of enlargement. Use, then learn, how to find the scale factor from the unit ratio. Working with inter-shape relationships, revisit the idea of constants of proportionality. Introduction of and developing on the idea of centre of enlargement</p> <p><b>Trigonometry:</b> Introduction using the unit circle, linking to similar shapes, exploring and generalising the relationship between sides and angles in a right angle triangle through trigonometry and moving on to the use of the ratios</p>	<p><b>Algebra Review:</b> Simplification is focused on, firstly by looking at multiplication and division algebraic conventions, then by collecting like terms and finally by expanding a single pair of brackets. Followed by substitution, rearranging and equations with two variables</p> <p><b>Quadratic Expressions and Equations:</b> Interpreting quadratic graphs, estimating values, factorising and expanding up to 3 or more binomials</p>	<p><b>Surds:</b> Introduction to rational and irrational numbers, and surds. This unit can be thought of as "surds-lite" as students will be introduced to surds in a way that is key stage appropriate</p> <p><b>Indices:</b> Explore indices and roots, including looking at cases with negative indices and an index of zero. Multiplication and division of indices</p> <p><b>Standard Form::</b> Powers of 10 and their important role in our number system. Comparing, writing and connecting standard form</p> <p><b>Growth and Decay:</b> Use of decimal multipliers linked to compound growth and decay and considering reverse percentages</p>

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	F	H	F	H	F	H	F	H	F	H	F	H
10	<p><b>Number</b> Revisit and develop a range of calculations including fractions, factors and</p>	<p><b>Number</b> Revisit and develop number work including HCF and LCM, Indices, standard form</p>	<p><b>Algebra:</b> Revisit and develop algebraic notation, expressions, substitution and formulae.</p>	<p><b>Algebra</b> Revisit and develop solving equations, expanding and factorising -</p>	<p><b>Equations, inequalities and sequences</b> Solving equations and inequalities with single</p>	<p><b>Equations and inequalities:</b> Solve linear, simultaneous equations and quadratic equations including</p>	<p><b>Ratio and proportion:</b> Use ratio notation, simplify, write - including 1:n, share amounts and</p>	<p><b>Angles and trigonometry:</b> Explore and solve problems involving interior and</p>	<p><b>Graphs:</b> Find midpoints, plot straight line and real life graphs, understand the elements</p>	<p><b>Area and volume:</b> Write and calculate using upper and lower bounds, convert</p>	<p><b>Perimeter, area and volume 1:</b> Calculate missing lengths, perimeter, area and</p>	<p><b>Multiplicative Reasoning:</b> Find amounts after repeated percentage changes including the</p>



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	<p>multiples, index notation, primes, squares, cubes and roots</p> <p><i>Transition to GCSE content for all revisit topics.</i></p> <p><b>Fractions and Percentages:</b> Revisit and develop: Calculations and conversions involving fractions, decimals and percentages (FDP)</p>	<p>and surds.</p> <p><i>Transition to GCSE content for all revisit topics.</i></p> <p><b>Fractions, ratio and percentages:</b> Revisit and develop: the four operations with fractions, ratio and proportionality <math>y = 1:n</math> and <math>n:1</math>, direct proportion and calculations involving FDP.</p>	<p>Expand and simplify expressions with brackets, factorise algebraic expressions</p> <p><b>Probability:</b> Use of two way tables and sample space diagrams, Draw and use frequency, probability trees and venn diagrams to calculate probabilities</p>	<p>including quadratics, Linear and non-linear sequences</p> <p><b>Probability:</b> Use of two way tables and sample space diagrams, Estimate probabilities, Draw and use frequency, probability trees and venn diagrams for theoretical, experimental and independent events</p>	<p>brackets and unknowns on both sides, changing the subject of simple formulae and working with linear sequences</p> <p><b>Graphs, tables and charts</b> Design tables and data collection sheets, use data from tables, draw and use a range of charts including scatter and pie charts</p>	<p>completing the square and real life contextual problems</p> <p><b>Interpreting and representing data:</b> Construct and use a range of diagrams, charts and graphs, make predictions and estimations as well as choosing appropriate diagrams to display data and find averages from tables and graphs</p>	<p>solve a range of problems. Use direct proportion on a graph and work with inverse proportions</p> <p><b>Angles:</b> Solve geometric problems using angle facts involving parallel lines and simple polygons. Interior and exterior angles of regular/irregular polygons,</p> <p><b>Right-angled triangles:</b> Understand and use Pythagoras theorem and trigonometry to find missing sides and angles in right angled triangles</p>	<p>exterior angles of polygons. Calculate missing sides and angles of right angle triangles using Pythagoras' theorem and trigonometry. Know the exact values of trigonometric ratios</p> <p><b>Transformations and constructions:</b> Draw and use scales on maps, Construct and bisect accurately using a ruler, compass and protractor, Solve problems involving bearings, draw a locus and solve loci problems</p>	<p>of <math>y=mx+c</math> and use graphs to solve problems and make predictions</p> <p><b>Transformations:</b> Drawing, identifying and describing the 4 transformations on a range of grids using key terminology and notation</p>	<p>between units of measure, calculate lengths (arcs) angles and areas of circles and parts of a circle, calculate the surface area and volume of pyramids, cones and spheres</p> <p><b>Graphs:</b> Draw, recognise and interpret from a range of graphs - real life, quadratic, cubic and reciprocal</p>	<p>volume of a range of 2D and 3D shapes. Calculate the surface area of cuboids and other prisms. Convert between units of measures including volume.</p> <p><b>Multiplicative reasoning:</b> Find amounts after repeated percentage changes, Solve problems involving compound measures. Use direct and indirect proportion</p>	<p>iterative process. Solve problems involving compound measures. Use direct and indirect proportion to solve problems</p> <p><b>Similarity and Congruence:</b> Show that 2 triangles are congruent, Solve problems involving congruence, linear, area and volume scale factors, use this knowledge to solve real life problems</p>
11	<p><b>Averages and range:</b> Calculate and estimate the mean from frequency tables, Find the mode, median and range from stem and leaf diagrams and</p>	<p><b>Circle Theorems:</b> Learn the circle theorems and use them to solve relative problems. Find the equation of a tangent to a circle at a</p>	<p><b>Perimeter, area and volume 2:</b> Calculate the area and circumference of a circle, solve area and perimeter problems involving 2D. Work out the</p>	<p><b>Further Statistics:</b> Understand the use of random sampling, Petersen capture-recapture method, cumulative frequency, box plots,</p>	<p><b>Congruence, similarity and vectors:</b> Understand and use similarity to solve angle problems, use congruence to work missing sides from triangles</p>	<p><b>More Algebra:</b> Use the four operations with algebraic fractions as well as solve equations involving them. Further problem solving involving</p>	<p><b>Revision</b></p>	<p><b>Revision</b></p>	<p><b>Exams</b></p>	<p><b>Exams</b></p>	<p><b>Exams</b></p>	<p><b>Exams</b></p>



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frequency tables, understand sampling and how to avoid bias	given point and prove the alternate segment theorem	volumes and surface area pyramids and cones	interquartile ranges and histograms	and shapes made from multiple triangles, work with vectors including addition, subtraction and finding multiples.	surds, working with composite functions					
<b>Constructions, loci and bearings:</b> Recognise and use mathematical terminology for 2D and 3D shapes, construct and bisect accurately using a ruler, compass and protractor, understand the use of bearings and find and use 3 figure bearings	<b>More Trigonometry:</b> Understand and use bounds particularly in relation to trigonometry, the sine, cosine and tangent rules to solve problems and solve equations related to them. Solve 3D problems using Pythagoras' theorem and trigonometry	<b>Fractions, indices and standard form:</b> Multiply and divide mixed numbers and fractions, know and use the laws of indices, convert numbers to and from standard form, use the four operations to calculate in standard form	<b>Equations and Graphs:</b> Solve simultaneous equations graphically, represent and interpret inequalities on graphs, find roots (including cubic) and solve quadratic equations and inequalities, expand triple brackets, use the iterative process to solve quadratic and cubic equations	<b>More algebra:</b> Draw and interpret a range of graphs, solve simultaneous equations graphically and algebraically, change the subject of a formula and work with expressions, equations, formulae and identities	<b>Vectors and Geometric Proof:</b> Understand vector notation and use it in representing and solving vector problems both graphically and positional, including collinear points, parallel lines and proof					
<b>Quadratic equations and graphs:</b> Multiply out double brackets and make connections with solving and plotting quadratic equations and graphs respectively					<b>Proportions and graphs:</b> Reciprocal and exponential graphs; Gradient and area under graph problems. Solve direct and inverse proportionality problems involving graphs as well as square and cubic proportionality					