

	• Misconception checks	• Misconception checks	• Misconception checks	• Misconception checks	• Misconception checks	• Misconception checks
Links to key stage 3/ prior knowledge needed	<p>Students will have an appreciation of place value, and recognise even and odd numbers.</p> <p>Students will have knowledge of using the four operations with whole numbers.</p> <p>Students should have knowledge of integer complements to 10 and to 100.</p> <p>Students should have knowledge of strategies for multiplying and dividing whole numbers by 2, 4, 5, and 10.</p>	<p>Students should be able to read scales on graphs, draw circles, measure angles and plot coordinates in the first quadrant, and know that there are 360 degrees in a full turn and 180 degrees at a point on a straight line.</p> <p>Students should have experience of tally charts.</p> <p>Students will have used inequality notation.</p> <p>Students must be able to find the midpoint of two numbers.</p> <p>Students should be able to use the correct notation for</p>	<p>Students should be able to use inequality signs between numbers.</p> <p>Students should be able to use negative numbers with the four operations, recall and use the hierarchy of operations and understand inverse operations.</p> <p>Students should be able to deal with decimals and negatives on a calculator.</p> <p>Students should be able to use index laws numerically.</p> <p>Students should be able to draw a number line.</p>	<p>Students should be able to calculate the midpoint of two numbers.</p> <p>Students will have drawn the statistical diagrams in unit 3.</p> <p>Students will have used inequality notation.</p> <p>Students should be able to measure lines and recall the names of 2D shapes.</p> <p>Students should be able to use strategies for multiplying and dividing by powers of 10.</p> <p>Students should be able to find areas by counting</p>	<p>Students should recall basic shapes.</p> <p>Students should be able to plot points in all four quadrants.</p> <p>Students should have an understanding of the concept of rotation.</p> <p>Students should be able to draw and recognise lines parallel to axes and $y = x$, $y = -x$.</p> <p>Students will have encountered the terms clockwise and anticlockwise previously.</p> <p>Students should know the four</p>	<p>Students should be able to interpret scales on a range of measuring instruments.</p> <p>Students should be able to find a percentage of an amount and relate percentages to decimals.</p> <p>Students should be able to rearrange equations and use these to solve problems.</p> <p>Students should know speed = distance/time, density = mass/volume.</p> <p>Students should be able to measure and draw lines.</p>

	<p>Students should be able to read and write decimals in figures and words</p> <p>Students should have the ability to use negative numbers with the four operations and recall and use hierarchy of operations and understand inverse operations;</p> <p>Students should have prior knowledge of dealing with decimals and negatives on a calculator;</p> <p>Students should be able to use the index laws numerically.</p>	<p>time using 12- and 24-hour clocks.</p> <p>Students should be able to use the four operations of number.</p> <p>Students should be able to find common factors.</p> <p>Students have a basic understanding of fractions as being 'parts of a whole'.</p> <p>Students should be able to define percentage as 'number of parts per hundred'.</p> <p>Students should know number complements to 10 and multiplication tables.</p>	<p>Students should be able to use a ruler and protractor.</p> <p>Students should have an understanding of angles as a measure of turning.</p> <p>Students should be able to name angles and distinguish between acute, obtuse, reflex and right angles.</p> <p>Students should recognise reflection symmetry, be able to identify and draw lines of symmetry, and complete diagrams with given number of lines of symmetry.</p> <p>Students should recognise rotation symmetry and be able to identify orders of rotational symmetry, and</p>	<p>squares and volumes by counting cubes.</p> <p>Students should be able to interpret scales on a range of measuring instruments.</p> <p>Students should be able to plot coordinates and read scales</p> <p>Students should be able to substitute into a formula.</p>	<p>operations of number.</p> <p>Students should have a basic understanding of fractions as being 'parts of a whole'.</p> <p>Students should know how to add and multiply fractions and decimals.</p> <p>Students should have experience of expressing one number as a fraction of another number.</p>	<p>Students should know the formula for calculating the area of a rectangle.</p> <p>Students should know how to use the four operations on a calculator.</p>
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			<p>complete diagrams with given order of rotational symmetry.</p> <p>Students should be able to rearrange simple formulae and equations, as preparation for rearranging trigonometric formulae.</p> <p>Students should recall basic angle facts.</p> <p>Students should understand when to leave an answer in surd form.</p> <p>Students can plot coordinates in all four quadrants and draw axes.</p>			
Skill set development	Problem solving Mathematical reasoning	Problem solving Mathematical reasoning	Problem solving Mathematical reasoning	Problem solving Mathematical reasoning	Problem solving Mathematical reasoning	Problem solving Mathematical reasoning
	Independence	Independence	Independence	Independence	Independence	Independence

	Teamwork	Teamwork	Teamwork	Teamwork	Teamwork	Teamwork
Key Vocabulary (Tier 2/ Tier 3)	<p>Integer, number, digit, negative, decimal, addition, subtraction, multiplication, division, remainder, operation, estimate, power, roots, factor, multiple, primes, square, cube, even, odd</p> <p>Expression, identity, equation, formula, substitute, term, 'like' terms, index, power, collect, substitute, expand, bracket, factor, factorise, linear, simplify</p>	<p>Mean, median, mode, range, average, discrete, continuous, qualitative, quantitative, data, scatter graph, line of best fit, correlation, positive, negative, sample, population, stem and leaf, frequency, table, sort, pie chart, estimate</p> <p>Decimal, percentage, inverse, addition, subtraction, multiplication, division, fractions, mixed, improper, recurring, integer, decimal, terminating, percentage, VAT, increase, decrease,</p>	<p>Arithmetic, geometric, function, sequence, nth term, derive, quadratic, triangular, cube, square, odd, even, solve, change, subject, inequality, represent, substitute, bracket, expand, linear, equation, balance, accuracy</p> <p>Quadrilateral, angle, polygon, interior, exterior, proof, tessellation, rotational symmetry, parallel, corresponding, alternate, co-interior, vertices, edge, face, sides, triangle, perpendicular, isosceles, scalene, clockwise, anticlockwise, hexagons,</p>	<p>Mean, median, mode, range, average, discrete, continuous, qualitative, quantitative, data, sample, population, stem and leaf, frequency, table, sort, pie chart, estimate, primary, secondary, interval, midpoint, survey</p> <p>Triangle, rectangle, parallelogram, trapezium, area, perimeter, formula, length, width, prism, compound, measurement, polygon, cuboid, volume, symmetry, vertices, edge, face, units, conversion</p> <p>Linear, graph, distance, time, coordinate, quadrant, real-life graph, gradient,</p>	<p>Transformation, rotation, reflection, enlargement, translation, single, combination, scale factor, mirror line, centre of rotation, centre of enlargement, column vector, vector, similarity, congruent, angle, direction, coordinate, describe</p> <p>Ratio, proportion, share, parts, fraction, function, direct proportion, inverse proportion, graphical, linear, compare</p> <p>Probability, dependent, independent, conditional, tree diagrams, sample space, outcomes, theoretical, relative</p>	<p>Ratio, proportion, best value, proportional change, compound measure, density, mass, volume, speed, distance, time, density, mass, volume, pressure, acceleration, velocity, inverse, direct</p> <p>Construct, circle, arc, sector, face, edge, vertex, two-dimensional, three-dimensional, solid, elevations, congruent, angles, regular, irregular, bearing, degree, bisect, perpendicular, loci, map, scale, plan, region</p> <p>Area, perimeter, formula, length, width,</p>

		multiplier, profit, loss	<p>heptagons, octagons, decagons, obtuse, acute, reflex, quadrilateral, triangle, regular, irregular, two-dimensional, three-dimensional, measure, line, angle, order, intersecting</p> <p>Triangle, right angle, angle, Pythagoras' Theorem, sine, cosine, tan, trigonometry, opposite, hypotenuse, adjacent, ratio, elevation, depression, length, accuracy</p>	intercept, function, solution, parallel	frequency, fairness, experimental	<p>measurement, volume, circle, segment, arc, sector, cylinder, circumference, radius, diameter, pi, sphere, cone, hemisphere, segment, accuracy, surface area</p>
Reading and Oracy	<p>Students need to be able read, speak and think in mathematical language, identifying key concepts and processes of the wordier questions. Teachers will improve students' verbal communication skills, to enable them to show their understanding of mathematics accurately. Common strategies within lessons are:</p> <ul style="list-style-type: none"> - giving students sufficient time to read and process information from wordier questions - asking open questions - expanding and justifying answers 					

	<ul style="list-style-type: none"> - repetition of a correctly modelled sentence, to practice oracy skills - using the correct vocabulary and terms within discussions - referring to definitions and meanings when using tier 2 and 3 mathematical vocabulary - addressing common misconceptions. 					
Numeracy						
Opportunities						
Careers						
SMSC including British Values, Culture and Diversity	<p>The mathematics curriculum helps prepare pupils for life in a modern Britain by developing their personal qualities and social skills with the chance to discuss, argue and challenge other people's ideas in a safe environment. Everyone is encouraged to express their own personal views on the mathematical topics. Alongside everyone learning how to be accepting of other people's views, students gain realisation that there is not always one route to an answer but several different ways.</p> <p><u>Spiritual</u> - pupils are encouraged to use their imagination and creativity to break problems down and solve them by thinking out side of the box.</p> <p><u>Moral</u> – pupils look at consequences and what happens if rules are not followed. Will an action to one number apply to all numbers?</p> <p><u>Social</u> – developing personal qualities and social skills. Being able to work with others, show perseverance, being able to ask for help and not being afraid to try something new.</p> <p><u>Cultural</u> – understanding others students' views and being able to express their own views. Exploring problems from a range of cultures.</p>					
Relationship and Sex Education and Health Education	<p>The mathematics curriculum aims to provide pupils with the knowledge and understanding that will enable them to lead a happy, healthy and successful adult life. All pupils are supported to develop resilience, to know how and when to ask for help, and to know where to access support. This develops their capacity to make sound decisions when facing risks, challenges and complex contexts in their lives. Character traits such as perseverance and self-belief, together with personal attributes such as honesty, integrity, tolerance and kindness, will be actively cultivated and celebrated.</p>					

Key Documents:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/908013/Relationships Education Relationships and Sex Education RSE and Health Education.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/908013/Relationships_Education_Relationships_and_Sex_Education_RSE_and_Health_Education.pdf)

<https://www.thecdi.net/write/CDI-Framework-Jan2020-web.pdf>