Strand	WT1-	WT1	WT2	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6	STEP 7	STEP 8	STEP 9
Number	Round positive whole numbers to the nearest 10, 100 or 1000	Apply four operations in correct order to integers and proper fractions	Round decimals to the nearest whole number	Round numbers to significant figures	Divide decimals with one or two places by single-digit whole numbers	Identify upper and lower bounds for rounding of discrete and continuous data	Understand that each of the headings in the place value system, to the left of the units column, can be written as a power of ten	Multiply and divide simple fractions (mixed) - positive and negative	Use inequality notation to specify simple error intervals due to truncation or rounding	Use the product rule for counting (i.e. if there are m ways of doing one task and for each of these, there are n ways of doing another task, then the total number of ways the two tasks can be done is m × n ways)	Calculate the upper and lower bounds of 2-D measurements e.g. area	
Number	Add, subtract multiply and divide integers - positive and negative	Extend written methods to HTU × U	Multiply and divide decimals by 10, 100, 1000, and explain the effect	Use symbols $=$, $\neq$, $<$, $>$, $\leq$, $\geq$	Add and subtract simple fractions with denominators of any size	Identify the upper and lower bounds of a measurement	Multiply both sides of an inequality by a negative number	Calculate with roots (surds exact values)	Estimate powers and roots of any given positive number	Convert a recurring decimal to a fraction in simple cases	Calculate the upper and lower bounds of other compound measurements e.g. density	
Number	Use standard column procedures to add and subtract whole numbers	Understand addition and subtraction as they apply to whole numbers and decimals	Multiply by 0	Multiply three-digit by two-digit whole numbers	Multiply a fraction by an integer	Recognise that measurements given to the nearest whole unit may be inaccurate by up to one half in either direction. Use error intervals.	To understand the difference between squaring a negative number and subtracting a squared number within a more complex calculation	Write numbers less than 10 in standard index form	Recall that $n^0 = 1$ and $n^{-1} = 1/n$ for positive integers n as well as $n^{1/2} = \sqrt{n}$ and $n^{1/3} = \sqrt[3]{n}$ for any positive number n	Understand a recurring decimal to fraction proof	Write $(3 - \sqrt{3})^2$ in the form $a + b\sqrt{3}$	
Number	Know by heart multiplication facts up to 10 × 10	Multiply and divide integers by 10 and 100, and explain the effect	Understand multiplication as it applies to whole numbers and decimals	Divide three-digit by two-digit whole numbers	Be able to multiply any number by 0.1 and 0.01	Understand that each of the headings in the place value system, to the right of the tens column, can be written as a power of ten	Find the reciprocal of simple numbers/fractions e.g. 10 and 1/10, 1/3 and 3 etc.	Order numbers written in standard index form		Find the value of calculations using indices including fractional and negative indices	Rationalise a denominator	
Number	Use halving	Understand that halving is the reverse of doubling	Understand division as it applies to whole numbers and decimals	Extend written methods to U.t × U	Be able to divide any number by 0.1 and 0.01	Write numbers as a decimal number of millions or thousands, e.g. 23 600 000 as 23.6 million	Understand the order in which to calculate expressions that contain powers and brackets in both the numerator and denominator of a fraction	Convert between large and small numbers into standard form and vice-versa		Understand that the inverse operation of raising a positive number to a power n is raising the result of this operation to the power 1/n		
Number	Use doubling	Apply simple tests of divisibility (3, 6, 4, 25)	Extend written methods to HTU ÷ U	Multiply decimals with one or two places by single-digit whole numbers	Understand the effect of multiplying by any integer power of 10	Use knowledge of place value to calculate the product or division of two decimals where one or both are less than 1 and at least one has two digits other than zero.	Know that a number multiplied by its reciprocal is 1	Add and subtract in standard form		Simplify surd expressions involving squares (e.g. $\sqrt{12} = \sqrt{(4 × 3)} = 2\sqrt{3}$)		
Number	Partition to multiply mentally TU × U	Know square numbers 6 × 6 to 9 × 9	Use standard column procedures to add and subtract decimals with up to two places	Begin to add and subtract simple fractions and those with simple common denominators	Understand the effect of dividing by any integer power of 10	Divide integers and decimals, including by decimals such as 0.6 and 0.06 (divisions related to 0.t × 0.t or 0.t × 0.0h, 0.0h × 0.t and 0.0h × 0.0h)	Know that the reciprocal of a reciprocal is the original number	Multiply and divide numbers in standard form		Use fractions, surds and pi in exact calculations, without a calculator		
Number	Find a difference by counting up through the next multiple of 10	Put digits in the correct place in a calculation	Extend written methods to TU × TU	Add and subtract positive integers from negative integers	Add and subtract negative integers from positive and negative numbers	Use standard column procedures to add and subtract integers and decimals of any size, including a mixture of large and small numbers with different numbers of decimal places	Use conventional notation for priority of operations, including roots and reciprocals					
Number	Add three or more multiples of 10	Know what each digit represents in numbers with up to two decimal places	Know and use the order of operations	Multiply and divide negative integers by a positive number	Use mental strategies for multiplication - doubling and halving strategies	Multiply and divide by decimals, dividing by transforming to division by an integer	Understand and use compound measures: density; pressure; speed					
Number	Recognise multiples up to 10 × 10	Be able to use > or < correctly between two positive decimals. Decimals should be to 4 or 5 significant figures	Quickly derive associated division facts	Add and subtract integers - positive and negative numbers	Use mental strategies for multiplication - partitioning two 2 digit numbers where one number includes a decimal (both numbers have two significant figures)	Divide an integer by a fraction	Round numbers and measures to an appropriate degree of accuracy (dp or sig fig)					
Number	Apply simple tests of divisibility (2, 9, 10, 5)	Be able to order positive decimals with the largest on the left. Decimals should be to 4 or 5 significant figures	Check a result by working it backwards	Multiply and divide negative integers by a negative number	Use mental strategies for multiplication of decimals - doubling and halving strategies	Be able to simplify expressions containing powers to complete the calculation	Find HCF and LCM using Prime Factors					
Number	Know square numbers, 10 × 10, 1 × 1 to 5 × 5	Be able to order positive decimals as a list with the smallest on the left. Decimals should be to 4 or 5 significant figures	Round numbers to decimal places	Be able to subtract integers and decimal with up to two decimal places	Have strategies for calculating fractions and decimals of a given number	Understand which part of an expression is raised to a power by knowing the difference between $3 × (7 + 8)^2$ and $3^2 × (7 + 8)$ and $(3 × (7 + 8))^2$	Use prime factorisation to represent a number as a product of its primes using index notation					
Number	order positive and negative integers		Recognise and use multiples and factors (divisors) and use simple tests of divisibility	Be able to add and subtract integers and decimal with varying numbers of decimal places	Add and subtract up to 3 fractions mixing both addition and subtraction into the calculation, with denominators less than or equal to 12 and using the LCM denominator in the calculation - the answer can be a mixed number	Recognise and use relationships between operations, including inverse operations	Recognise that prime factor decomposition of a positive integer is unique					
Number	Use diagrams to compare two or more simple fractions		Identify numbers with exactly 2 factors (primes)	Be able to add and subtract more than two integers or decimals with up to two decimal places, but with varying numbers of significant figures and using a mixture of operation within the calculation	Add mixed number fractions without common denominators, where the fraction parts add up to more than 1	Calculate average speed, distance, time - in mph as well as metric measures	Add and subtract fractions (mixed) - positive and negative					
Number			Understand the difference between factor, multiple and prime numbers	Use the order of operations with brackets, including in more complex calculations	Multiply an integer by a fraction	Convert between metric speed measures	Use the square, cube and power keys on a calculator					
Number			Find all the factor pairs for any whole number without any support	Use inverse operations	Be able to work with calculations where the brackets are squared or square rooted	Understand the effect of multiplying or dividing any number between 0 and 1	Use the index laws to include negative power answers and understand that these answers are smaller than 1					
Number			Able to determine factors and multiples of numbers by listing	Simplify fractions by cancelling all common factors	Be able to estimate answers to calculations involving 2 or more operations and BODMAS	Multiply and divide simple fractions (proper and improper) - positive and negative	Use the laws of indices to multiply and divide numbers written in index notation					
Number			Understand the vocabulary of prime numbers, factors (divisors), multiples, common factors, common multiples.	Be able to work with calculations where numbers are squared within a bracket	Apply systematic listing strategies	Add and subtract fractions (proper and improper) -positive and negative	Convert between currencies					
Number			Recognise that every number can be written as a product of two factors	Know that the contents of brackets are evaluated first	Multiply and divide decimals - positive and negative	Use halving and doubling strategies on fractions to find decimal equivalents of other fractions, e.g. 1/4 = 0.25 so 1/8 is half of 0.25 etc. Original fact is given	Estimate answers to calculations by rounding numbers to 1 sig. fig					
Number			Convert terminating decimals to fractions, e.g. 0.23 = 23/100	Use conventional notation for priority of operations, including brackets and powers	Find lowest common multiple by listing	Convert a fraction to a decimal to make a calculation easier	Check reasonableness of answers					

Number			Recall known facts including fraction to decimal conversions	Add and subtract decimals - positive and negative	Recognise rules relating to odd and even numbers	Be able to find square roots by factorising, e.g. square root of 324 is square root of 4 × 81 which is 18. 324 = 4 × 81 should be given	Estimate answers to one- or two-step calculations					
Number			Extend mental methods of calculation to include percentages	Find common factors and primes	Understand the vocabulary of highest common factor, lowest common multiple	Be able to find cube roots by factorising, e.g. cube root of 216 is cube root of 8 × 27 which is 6. 216 = 8 × 27 should be given to them	Write numbers greater than 10 in standard index form					
Number			Calculate simple percentages	Recognise and use common factor, highest common factor and lowest common multiple	Use division to convert a fraction to a decimal	Mentally able to calculate the squares of numbers less than 16 multiplied by a multiple of ten, e.g. 0.2, 300, 0.400						
Number			Recognise the first few triangular numbers	Find the prime factor decomposition of a number less than 100	Convert a terminating decimal to a fraction and simplify the fraction	Combine laws of arithmetic for brackets with mental calculations of squares, e.g. (23 – 13 + 4 – 8)³						
Number			Know square numbers beyond 10 × 10	Find the HCF or LCM of two numbers	work interchangeably with terminating decimals and their corresponding fractions (such as 3.5 and 7/2 or 0.375 or 3/8)	Combine laws of arithmetic for brackets with mental calculations of cubes, e.g. (23 – 13 + 4 – 8)³						
Number			Find roots of square numbers upto 100 (i.e. roots upto 10)	Know the prime factorisation of numbers up to 30. They must give their answers as powers	Learn fractional equivalents to key recurring decimals e.g. 0.333333..., 0.66666666..., 0.11111... and by extension 0.222222...	Combine laws of arithmetic for brackets with mental calculations of square roots, e.g. √(45 + 36)						
Number			Compare decimals in different contexts	Recognise two digit prime numbers	Know the denominators of simple fractions that produce recurring decimals, and those that do not	Combine laws of arithmetic for brackets with mental calculations of cube roots, e.g. ³√(89 + 36)						
Number			Understand and use decimal notation and place value	Calculate simple fractions of quantities and measurements (whole-number answers)	Interpret percentage as the operator 'so many hundredths of'	Be able to use mental strategies to solve word problems set in context using square roots and cube roots mentally						
Number			Approximate before carrying out an addition or subtraction	Extend the percentage calculation strategies with jottings to find any percentage, e.g. 17.5% by finding 10%, 5% and 2.5%, and adding	Calculate fractions of quantities and measurements (fraction answers)	Establish index laws for positive powers where the answer is a positive power						
Number				Use index notation for squares and cubes and for positive integer powers of 10 (e.g. write 27 as 3³ and 1000 as 10³)	Give the positive and negative square root of a square number	Extend the patterns by using the index law for division established for positive power answers, to show that any number to the power of zero is 1						
Number				Be able to order negative decimals with the smallest on the left. Decimals should be to 2 or 3 significant figures	Know all the squares of numbers less than 16 and be able to know the square root given the square number	Use an extended range of calculator functions, including +, -, x, , x², √x, memory, xʸ, x^(1/y), brackets						
Number				Be able to order negative decimals with the largest on the left. Decimals should be to 2 or 3 significant figures	Use index notation for small integer powers, e.g. 24 = 3 × 2³	Order fractions by converting them to decimals or otherwise						
Number				Be able to use > or < correctly between two negative decimals. Decimals should be to 2 or 3 significant figures	Find and interpret roots of non square numbers using square root key	Use one calculation to find the answer to another						
Number				Order fractions, decimals and percentages	Extend mental calculations to squares and square roots	Express a multiplicative relationship between two quantities as a ratio or a fraction						
Number				Make estimates and approximations of calculations - use a range of ways to find an approximate answer	Extend mental calculations to cubes and cube roots	Use numbers of any size rounded to 1 significant figure to make standardized estimates for calculations with one step						
Number				Check a result by considering if it is of the right order of magnitude	Be able to estimate square roots of non square numbers less than 100	Know there are different ways of finding an approximate answer						
Algebra			Find outputs of more complex functions expressed in words (e.g. add 6 then multiply by 3)	Substitute positive integers into simple formulae expressed in letter symbols, e.g. a+/- b, a × b	Substitute positive and negative integers in simple formulae	Substitute positive integers into expressions involving small powers (up to 3)	Use systematic trial and improvement to find the approximate solution to one decimal place of equations such as x³ = 29	Find the equation of a straight-line from its graph	Change the subject of a complex formula that involves fractions, e.g. make u or v the subject of the formula 1/v + 1/u =1/t	Use function notation	Apply to the graph of y = f(x) the transformations y = - f(x) y = f(-x) y = -f(-x) for linear, quadratic, cubic, sine and cosine functions	Interpret the gradient of linear or non-linear graphs, and estimate the gradient of a quadratic or non-linear graph at a given point by sketching the tangent and finding its gradient
Algebra			Find the inputs of simple functions expressed in words by using the output and inverse operations	Substitute integers into more complex formulae expressed in letter symbols, e.g. a/b, ax +/- b	Write expressions to solve problems representing a situation	Select an expression/ equation/ formula/identity from a list	Construct and solve equations that involves multiplying out brackets by a negative number (e.g. 4(2a - 1) = 32 - 3(2a - 2))	Identify the line of symmetry of a quadratic graph	Identify and interpret gradient from an equation ax+by=c	Deduce turning points by completing the square	Apply to the graph of y = f(x) the transformations y = f(x) + a y = f(ax) y = f(x + a) y = af(x) for linear, quadratic, cubic, sine and cosine functions f(x)	Find the equation of a tangent to a circle at a given point
Algebra			Use function machines to find coordinates	Identify variables and use letter symbols, e.g. 'the cost of hiring a van...', c = cost, v = van	Understand the difference between an expression and an equation and the meaning of the key vocabulary 'term'	Use the distributive law to take out numerical common factors, e.g. 6a + 8b = 2(3a + 4b)	Derive a simple formula, including those involving squares, cubes and roots	Recognise that when the linear and inverse of a linear function such as y = 2x, y = 3x are plotted, they are a reflection in the line y = x	Find approximate solutions of a quadratic equation from the graph of the corresponding quadratic function	Sketch a graph of a quadratic by factorising, identifying roots and y-intercept , turning point	Construct the graphs of simple loci including the circle x² + y² = r² for a circle of radius r centred at the origin of the coordinate plane	Interpret coodinates for trigonometric graphs
Algebra			Discuss and interpret line graphs and graphs of functions from a range of sources	Identify formulae and functions	Understand the different role of letter symbols in formulae and functions	Manipulate expressions by taking out common factors, not necessarily the highest e.g. 4x + 8 = 2(2x + 4)	Multiply out brackets involving positive terms such as (a + b)(c + d) and collect like terms	Interpret distance-time graphs and calculate the speed of individual sections, total distance and total time	Recognise, sketch and interpret graphs of simple cubic functions	Find the equation of the line through two given points	Find the gradient of the radius that meets the circle at a given point	Plot graphs of the exponential function y = abˣ for integer values of x and simple positive values of a and b.
Algebra			Read values from straight-line graphs for real-life situations	Identify the unknowns in a formula and a function	Select an expression/ equation/ formula from a list	Change the subject of a formula in one step e.g. y = x + 4	Substitute positive and negative integers into linear expressions and expressions involving powers	Interpret gradient as rate of change in distance-time and speed-time graphs, containers emptying and filling and unit price graphs	Recognise, sketch and interpret reciprocal graphs	Find the equation of the line through one point with a given gradient	Find the nth term of a quadratic sequence of the form n² ,an² ,an² ± b, an² ± bn ± c,	Use iteration with simple converging sequences

Category											
Algebra			Draw, straight-line graphs for real-life situations	Explain the distinction between equations, formulae and functions	Express simple functions in symbols	Begin to consider the features of graphs of simple linear functions, where y is given explicitly in terms of x, e.g. y = x, y = 2x, y = 3x are all straight lines that pass through the origin, vary in steepness depending on the function	Know and understand the meaning of an identity and use the# sign	Identify and interpret roots, intercepts and turning points of a quadratic graph	Find the coordinates of the midpoint of a line from coordinates using a formula	Know that a line perpendicular to the line y = mx + c, will have a gradient of -1/m	Solve exactly, by elimination of an unknown, linear/$x^2 + y^2 = r^2$ simultaneous equations
Algebra			Use conventions and notation for 2-D co-ordinates in all four quadrants.	simplify algebraic expressions by collecting like terms	Generate four quadrant coordinate pairs of simple linear functions	Use gradients to interpret how one variable changes in relation to another	Factorise to one bracket by taking out the highest common factors for all terms e.g. $2x^2y + 6xy^2 = 2xy(x + 3y)$	Given the coordinates of points A and B, calculate the length of AB	Solve linear inequalities in two variables graphically	Write down the equation of a line perpendicular to a given line	
Algebra			Draw, label and scale axes	Create basic expressions from worded examples e.g 6 more than x	Draw and use graphs to solve distance-time problems.	Discuss and interpret linear and non linear graphs from a range of sources	Find an unknown where it is not the subject of the formula and where an equation must be solved.	Plot and draw graphs of straight lines WITHOUT using a table of values (use intercept and gradient)	Solve two simultaneous inequalities algebraically and show the solution set on a number line	Interpret and analyse a straight line graph and generate equations of lines parallel and perpendicular to the given line	
Algebra			Use the correct notation to show inclusive and exclusive inequalities	Find outputs of more complex functions and inputs using inverse operations	Interpret information from a complex real life graph (fixed charge/unit cost), read values and discuss trends	Draw distance-time graphs and velocity-time graphs	Rearrange simple equations	Write down the equation of a line parallel to a given line	Answer simple proof and 'show that' questions using consecutive integers (n, n+1), squares a^2, b^2, even numbers 2n, and odd numbers 2n + 1	Solve quadratic inequalities in one variable, by factorising and sketching the graph to find critical values	
Algebra			Describe simple functions in words (e.g. add 3, multiply by 6, subtract 4)	Construct functions to describe mappings (completing a number machine)	Find the coordinates of points identified by geometrical information in 2D (all four quadrants) for simple shapes e.g. squares and rectangles	Find the coordinates of the midpoint of a line from a given graph	Know that the gradient of a line is the change in y over change in x.	Recognise a quadratic function from its equation and explain the shape of it's graph	Continue a quadratic sequence and use the nth term to generate terms	Simplify and manipulate algebraic expressions involving surds and algebraic fractions	
Algebra			Generate terms of a simple sequence using term to term rules like +3, -2	Plot a simple distance-time graph (straight-line graphs)	Plot a graph of a simple linear function in the first quadrant.	Plot the graphs of simple linear functions in the form y = mx + c in four quadrants	Without drawing the graphs, compare and contrast features of graphs such as y = 4x, y = 4x + 6, y = x + 6, y = -4x, y= x - 6	Solve more complex linear inequalities in one variable and represent the solution on a number line e.g. -6 < 2n+4 and -9 < 2n + 3 < 7	Use finite/infinite and ascending/ descending to describe sequences	Solve exactly, by elimination of an unknown, linear/quadratic simultaneous equations	
Algebra			Find the next term in a sequence, including negative values	Read x and y coordinate in all four quadrants	Plot and draw graphs of straight lines using a table of values	Recognise that equations of the form y = mx + c correspond to straight-line graphs in the coordinate plane	Identify parallel lines from their equations	Use algebra to support proofs e.g. show that the volume of a cube with side lengths of (2x - 1)cm is $(8x^3 - 12x^2 + 6x - 1)cm^3$	Distinguish between arithmetic and geometric sequences	Find approximate solutions to simultaneous equations formed from one linear function and one non-linear (quadratic or circle) function using a graphical approach	
Algebra			Generate and describe simple integer sequences – square and triangle numbers	Identify points with given coordinates and coordinates of a given point in all four quadrants	Drawing and recognising lines parallel to axes, plus y = x and y = -x	Write down whole number values that satisfy an inequality	Generate points and plot graphs of simple quadratic functions, then more general functions	Use algebra to support and construct arguments	Continue geometric progression and find term to term rule, including negative, fraction and decimal terms		
Algebra			Generate terms of a simple sequence arising from practical contexts	Plot and draw graphs of y = a, x = a, y = x and y = -x	Generate terms of a linear sequence using position to term with positive integers.	Find a specific term in the sequence using position-to-term rules	Construct a table of values, including negative values of x for a function such as y = ax^2	Generate arithmetic sequences of numbers , squared integers and sequences derived from diagrams	Simplify expressions involving brackets and powers e.g. $x(x^2+x+4)$, 3(a + 2b) – 2(a + b)		
Algebra			Generate terms of a more complex sequence arising from practical contexts	Show inequalities on a number line	Recognise arithmetic sequences from diagrams and draw the next term in a pattern sequence	Recognise sequences including those for odd and even numbers	Recognise a graph which represents a quadratic function	Identify which terms cannot be in a sequence	Square a linear expression and collect like terms		
Algebra			Use notation and symbols correctly	Find a term given its position in a sequence like tenth number in 4 × table is 40 (one operation on n)	Predict how the sequence should continue and test for several more terms	Begin to use formal algebra to describe the nth term in an arithmetic sequence.	Plot the graphs of linear functions in the form y = mx + c and recognise and compare their features	Generate the sequence of triangle numbers by considering the arrangement of dots and deduce that T(n) = 1 + 2 + 3 + …. + n, the sum of the series			
Algebra				Find a term of a practical sequence given its position in the sequence	Recognise simple sequences including triangular, square, cube numbers and Fibonacci-type sequences	Know that expressions involving repeated multiplication can be written as n, n^2, n^3	Recognise that linear functions can be rearranged to give y explicitly in terms of x e.g. rearrange y + 3x - 2 = 0 in the form y = 2 - 3x	Recognise and use simple geometric progressions (rn where n is an integer and r is a rational number > 0 or a surd)			
Algebra				Generate terms of a linear sequence using term-to-term using positive or negative integers.	Begin to use linear expressions to describe the nth term in a one-step arithmetic sequence (e.g. nth term is 3n or n + 5)	Understand the difference between 2n and n^2	Solve simple linear inequalities in one variable and represent the solution on a number line e.g. 3n + 2 <11 and 2n - 1 >1	By looking at the spatial patterns of triangular numbers, deduce that the nth term is 1/2n(n + 1)			
Algebra				Find a specific term in the sequence using term-to-term rules	Begin to use linear expressions to describe the nth term in a two-step arithmetic sequence (e.g. nth term is 3n + 1 or n/2 – 5)		Represent the solution set for inequalities using set notation	Use function machines to find terms of sequence			
Algebra				Generate and describe integer sequences such as powers of 2 and growing rectangles			Argue mathematically to show algebraic expressions are equivalent e.g $2x(x + 3) - 4(3x - x^2) = 6x(x - 1)$	Solve exactly, by elimination of an unknown, linear/linear simultaneous equations, including where both need multiplying			
Algebra				Know that an arithmetic sequence is generated by a starting number , then adding a constant number			Find and use the nth term of an arithmetic sequence	Solve linear/linear simultaneous equations graphically			
Algebra				Write the term-to-term definition of a sequence in words			Simplify simple expressions involving index notation	Solve simultaneous equation, linear/linear simultaneous equations,where neither or one equation needs multiplying			
Algebra				Know that expressions can be written in more than one way, e.g. 2 × 3 + 2 × 7 = 2(3 + 7)				Write simultaneous equations to represent a situation			
Algebra				Use arithmetic operations with algebra				Set up and solve a pair of simultaneous equations in two variables			
Algebra				Multiply together two simple algebraic expressions, e.g. 2a × 3b				Solve simultaneous equations representing a real-life situation graphically and interpret the solution in the context of the question			
Probability			Use a probability scale with words.	Apply the property that the probabilities of an exhaustive set of outcomes sum to 1	Know that if the probability of an event is p, the probability of it not occurring is 1-p	Draw a probability tree diagram based on given information (no more than 3 branches per event)	Record outcomes of events in a Venn Diagram	Find a missing probability from a list or two-way table including algebraic terms		Use a two-way table to calculate conditional probability	
Probability			Mark events and/or probabilities on a probability scale of 0 to 1	Identify all possible mutually exclusive outcomes of a single event	Identify different mutually exclusive outcomes and know that the sum of probabilities of all outcomes is 1	Apply probabilities from experimental data to a different experiment in applying to two step outcomes, e.g. spin a spinner twice and total the two numbers. Which total is the most likely?	Use theoretical models to include outcomes using spinners, dice, coins etc.	Use tree diagrams to calculate the probability of two dependent events		Use a tree diagram to calculate conditional probability	

Probability			Apply probabilities from experimental data to a different experiment in simple situations (only looking at one outcome) - how many successes would you expect?	Estimate the number of times an event will occur, given the probability and the number of trials	Identify conditions for a fair game - from a small set of options					Use Venn diagrams to calculate conditional probability	
Probability			Understand and use experimental and theoretical measures of probability, including relative frequency to include outcomes using dice, spinners, coins etc.	Compare experimental and theoretical probabilites	Calculate the probability of the final event of a set of mutually exclusive events.					Understand conditional probabilities and decide if two events are independent	
Probability			Use the vocabulary of probability	Compare relative frequencies from samples of different sizes	Use and draw sample space diagrams					Understand selection with or without replacement	
Probability			Understand and use the probability scale from 0 to 1	Identify all mutually exclusive outcomes for two successive events with two outcomes in each event	Draw a frequency tree based on given information and use this to find probability and expected outcome					Use a tree diagram to calculate conditional probability	
Probability			Find and justify probabilities based on equally likely outcomes in simple contexts	Identify all mutually exclusive outcomes for two successive events with three outcomes in each event	Record outcomes of probability experiments in tables						
Probability				Record outcomes of events in tables and grids	Use tree diagrams to calculate the probability of two independent events						
Probability			Apply probabilities from experimental data to a different experiment (a combination of two outcomes) - how many successes would you expect?								
Probability			When interpreting results of an experiment use vocabulary of probability								
Probability			Find the probability of an event happening using relative frequency								
Probability			Write probabilities in words, fractions, decimals and percentages								
Probability			Work out probabilities from frequency tables								
Probability			Work out probabilities from two-way tables								
Statistics	Find range from a set of ordered data	Find the range of a small set of data.	Choose and justify appropriate diagrams, graphs and charts, using ICT as appropriate, to illustrate a short report of a statistical enquiry	Interpret simple diagrams and charts	Interpret and/or compare bar graphs and frequency diagrams which are misleading (with false origins, different scales etc.)	Identify which graphs are the most useful in the context of the problem	Use more complex two way tables	Know the appropriate use of a cumulative frequency diagram	Interpret and analyse information in a range of linear graphs - to describe how one variable changes in relation to another	Know the appropriate use of Histograms	Use and understand frequency density
Statistics			Draw conclusions based on the shape of line graphs	Understand which representation is most appropriate for the data being presented	Interpret pie charts and line graphs taking into account different sized samples	Interpret and discuss data	Construct on paper, and using ICT, frequency diagrams for grouped discrete data	Construct cumulative frequency tables	Construct cumulative frequency graphs	Compare the mean, median, mode and range as appropriate of two distributions	Construct and interpret histograms from class intervals with unequal width
Statistics			Represent data in a table	Interpret data in a simple table	Construct on paper and using ICT simple pie charts using categorical data - e.g. two or three categories	Produce ordered back-to-back stem and leaf diagrams	Find the median, mode and range from a stem and leaf diagram	Calculate possible values of the set of data given summary statistics	Interpret cumulative frequency graphs	Use a spreadsheet to calculate mean and range and find median and mode	From a histogram complete a grouped frequency table
Statistics			Extract data and interpret discrete bar charts	Extract data and interpret frequency tables	Use simple two way tables	Make inferences about data through extracting information from a two way table	Estimate the mean of grouped data using the mid-interval value	Interpret box plots to find median, quartiles, range and interquartile range	Find the median, quartiles and interquartile range for large data sets with grouped data	Compare distributions and make inferences, using the shapes of distributions and measures of average and spread, including median and quartiles	From a histogram understand and define frequency density
Statistics			Find mode from a discrete data bar chart	Interpret simple pie charts	Construct a simple (no boundary data) frequency table with given equal class intervals for continuous data.	Recognise when it is appropriate to use mean, median or mode in more complex cases (put in extreme values)	Understand that the frequency represented by corresponding sectors in two pie charts is dependent upon the total populations represented by each of the pie charts	Produce box plots from raw data and identify outliers when given quartiles and median	Compare the measures of spread between a pair of box plots/cumulative frequency graphs	Compare median and inter-quartile range of two distributions	Estimate the median (or other information) from a histogram with unequal class width
Statistics			Extract data and interpret line graphs	Group data, where appropriate in equal class intervals	Construct a frequency table with given equal class intervals for continuous data (boundary data given)	Recognise when modal class is the most appropriate statistic for grouped data	Recognise the advantages and disadvantages between measures of average	Use random numbers to get a sample	Select and justify a sampling scheme and a method to investigate a population, including random and stratified sampling	From a cumulative frequency graph estimate frequency greater/less than a given value	
Statistics			Find mode group from a discrete data grouped bar chart	Design and use data collection sheets for grouped, discrete and continuous data	Identify where boundary data would go for different use of inequalities. Discrete and continuous data.	Construct and use frequency polygons to compare sets of data	Criticise questions from a questionnaire			Estimate the mean from a histogram	
Statistics			Construct on paper, and using ICT simple bar graphs to represent discrete data	Use information provided to complete a two-way table	Design tables recording discrete and continuous data	Identify and explain anomalies (outliers) in a data set	Understand how sources of data may be biased			Stratified sampling - know the definition and state in terms of proportion, fraction, percentage or ratio	
Statistics			Answer simple questions about 'most likely' from a simple bar chart	Produce pie-charts for categorical data and discrete/continuous numerical data	Construct complex bar graphs (should be compound)	Understand that the expression 'estimate' will be used where appropriate, when finding the mean of grouped data using mid-interval values	Decide what data to collect and what analysis is needed				
Statistics			Find the mode from any bar chart	Calculate the mean of a set of data	Construct with ICT simple line graphs for time series	Calculate the mean and range from a frequency table for discrete data	Write questionnaire questions to eliminate bias, on timing and location of survey to ensure sample is representative				
Statistics			Construct on paper, and using ICT, bar – line graphs to represent data	Compare two simple distributions using the range and the median	Design a question for a questionnaire	Understand how different sample sizes may not be representative of a whole population	Know the definition of random sampling				
Statistics			Produce bar charts including dual bar charts	Calculate the mean from a simple frequency table	Criticise questions for a questionnaire	Identify what primary data to collect and in what format including grouped data	State how reliable their predictions are				
Statistics			Produce pictograms	Compare two simple distributions using the range and the mean	Design and use two-way tables for discrete and grouped data.	Recognise quantitative and qualitative data	Draw a line of best fit by eye and understand what they represent				

Category												
Statistics			Find the mode and range for a small set of discrete data	Recognise when it is appropriate to use range, mean ,median or mode in simple cases (nice data, with no extreme values)	Produce grouped frequency tables for continuous data	Identify possible sources of bias and plan to minimise it	Understand that correlation does not imply causality					
Statistics			Calculate the median of a set of data	Interpret data from simple compound and comparative bar charts	Compare two distributions given summary statistics in simple cases.	Understand what is meant by a sample and a population	Distinguish between positive, negative and zero correlation using lines of best fit					
Statistics			Find the modal class for a small set of grouped discrete data	Calculate find the range, modal class, interval containing the median and find an estimate of the mean of a grouped data frequency table.	Compare two distributions given summary statistics in more complex cases.	Understand primary and secondary data sources	Appreciate that correlation is a measure of the strength of the association between two variables and that zero correlation does not necessarily imply 'no relationship' but merely 'no linear relationship'					
Statistics			Compare two simple distributions using one range and the mode	From a pie chart find the mode; total frequency	Compare two distributions using the range of data		Use a line of best fit, or otherwise, to predict values of one variable given values of the other variable					
Statistics			Draw conclusions from simple statistics for a single distribution		Interpret data from compound and comparative bar charts		Intepret scatter graphs in terms of the relationship between two variables					
Statistics			Find the modal class of a set of continuous data		Interpret a scatter graph		Use the line of best fit to make predictions					
Statistics			Calculate the mean, median, mode and range for discrete data		Draw scatter graphs		Interpolate and extrapolate apparent trends whilst knowing the dangers of doing so					
Statistics			Find the mode and range from a bar chart				Interpret correlation in terms of the problem					
Statistics			Interpret simple pie charts using simple fractions and percentages and multiples of 10% sections									
Geometry and measures	Explain why some shapes tessellate and why other shapes do not	Use a protractor to measure acute angles to the nearest degree	Use correct notation for labelling angles	Identify interior and exterior angles in a shape	Solve harder problems using properties of angles, of parallel and intersecting lines, and of other polygons - by looking at several shapes together	Given the bearing of point A from point B, work out the bearing of B from A	Mark on a diagram the position of point B given its bearing from the point A	Find the surface area of simple shapes (prisms) using the formulae for triangles and rectangles, and other shapes	Prove and use the fact that the angle in a semicircle is a right angle ;	Solve problems including examples of solids in everyday use	Use the formulae for length of arcs and area of sectors of circles to solve problems.	Solve problems involving more complex shapes and solids, including segments of circles and frustums of cones
Geometry and measures	Tessellate combinations of polygons	Measure lines to the nearest millimetre	Distinguish between acute and obtuse angles	Know the definition of a set of lines which are perpendicular to each other	Identify alternate and corresponding angles on parallel lines and their values.	Identify co-interior angles and their values.	Use accurate drawing to solve bearings problems	Find the surface area and volumes of compound solids constructed from cubes, cuboids, cylinder, prism, pyramids, spheres, hemispheres, cylinders	Prove and use the fact that angles in the same segment are equal	Prove and use the alternate segment theorem	Give reasons for angle sizes using mathematical language	Find the area of a segment of a circle given the radius and length of the chord
Geometry and measures	Know the sum of angles on a straight line	Know the sum of angles round a point	Distinguish between acute, obtuse and reflex angles	Calculate angles around a point	Find the area of triangles by counting i.e. adding full and partial squares	Use the sum of the exterior angles of any polygon is 360°	Use the sum of the interior angles of an n-sided polygon	Prove and use the fact that opposite angles of a cyclic quadrilateral sum to 180°	Recognise the formulae for length of arcs in a circle.	Use congruence to show that translations, rotations and reflections preserve length and angle, so that any figure is congruent to its image under any of these transformations	Give reasons for angle and length calculations involving the use of tangent theorems	Solve problems for areas and volumes of similar shapes and solids
Geometry and measures	Find the perimeter of a square/rectangle by counting	Identify parallel lines	Identify perpendicular lines	Recognise and use vertically opposite angles	Know the formulae for the volume of cube and a cuboid	Calculate the interior angles of regular polygons	Calculate the interior angles of polygons	Recognise the formulae for area of sectors in a circle.	Prove and use facts about the angle subtended at the centre and at the circumference;	Understand, recall and use Pythagoras' theorem in 3-D problems	Understand and use the fact that tangents from an external point are equal in length	Use the trigonometric ratios to solve 3-D problems
Geometry and measures	Know the terms face, edge and vertex	Find the perimeter of a square/rectangle	Use the formula for the area of a rectangle/square	Use sum of angles in a triangle to find missing angle values	Use a formula to calculate the area of parallelograms	Use the sum of angles in a triangle to deduce and use the angle sum in any polygon	Find the size of each interior angle or the size of each exterior angle or the number of sides of a regular polygon	Use the sine, cosine and tangent ratios to find the lengths of unknown sides in a right-angled triangle, using more complex algebraic manipulation, e.g. the hypotenuse (using cosine or sine), or adjacent (using the tangent ratio)	Solve problems involving angles, triangles and circles	Calculate the length of a diagonal of a cuboid	know and apply the cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$ to find unknown angles	Find the angle between a line and a plane (but not the angle between two planes or between two skew lines)
Geometry and measures	Identify and name common solids: cube, cuboid, cylinder, prism, pyramid, sphere and cone	Construct diagrams of everyday 2-D situations involving rectangles, triangles, perpendicular and parallel lines	Calculate the surface area of cubes with a net	Derive and use the sum of angles in a triangle and a quadrilateral	Use a formula to calculate the area of triangles	Deduce and use the formula for the area of a parallelogram	Calculate volumes of shapes made from cuboids, for lengths given as whole numbers	Use similarity to solve problems in 2D shapes	Use the appropriate ratio to find a length, or angle, and hence solve a two-dimensional problem	Enlarge 2D shapes, given a negative, fractional scale factor	Know and apply Area = 1/2 ab sin C to calculate the sides or angles of any triangle	Know the exact values of sin θ and cos θ for θ = 0°, 30°, 45°, 60° and 90°; know the exact value of tan θ for θ = 0°, 30°, 45° and 60°
Geometry and measures	Identify complex arrangements of a net of an open cube	Know and use geometric properties of cuboids	Use nets to calculate the surface area of simple cuboids	Derive and use the fact that the exterior angle of a triangle is equal to the sum of the two opposite interior angles	Deduce and use formulae for the area of a triangle	Use a formula to calculate the area of trapezia	Calculate the volume of right prisms	Use simple examples of the relationship between enlargement and areas and volumes of simple shapes and solids	Find angles of elevation and angles of depression	Know and apply the sine rule a/sin A = b/sin B = c/sin C to find unknown lengths and angles	Prove lines are parallel/colinear	Use the sine and cosine rules to solve 2-D and 3-D problems
Geometry and measures	Identify more complex arrangement of a net of a closed cube	Choose suitable metric units to estimate length and area.	Calculate perimeter and area of compound shapes made from triangles, rectangles and other shapes	Use the sum of the interior angle and the exterior angle is 180°	Calculate areas of compound shapes made from rectangles and triangles	Deduce and use formula for the area of a trapezium	Calculate the surface area of right prisms	Understand that a locus in 3D can be a plane or curved surface and extend understanding of loci to include 3D problems, e.g. know that all the points equidistant from a single point in space form the surface of a sphere	Know that the tangent at any point on a circle is perpendicular to the radius at that point.	know and apply the cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$ to find unknown lengths		Apply vector methods for simple geometrical proofs
Geometry and measures	Work out time intervals	Understand that area is measured in square centimetres	Identify different nets of a cuboid	Calculate the area of simple shapes made from rectangles	Know and understand the term 'congruent'	Calculate surface areas of shapes made from cuboids, for lengths given as whole numbers	Calculate the lengths and areas given the volumes in right prisms	Understand how standard constructions using straight edge and compasses relate to the properties of two intersecting circles with equal radii	Know that the perpendicular from the centre to the chord bisects the chord	Calculate the area of a triangle given the length of two sides and the included angle		
Geometry and measures	Read and interpret scales on a range of measuring instruments	Draw parallel lines	Know and use geometric properties of shapes made from cuboids	Calculate the area of more complex shapes made from rectangles	Know that triangles given SSS, SAS, ASA or RHS are unique, but that triangles given SSA or AAA are not.	Know the formulae for the circumference and area of a circle	Calculate the lengths, areas and volumes in cylinders	Know the formula for Pythagoras' theorem and use to find a shorter side	Complete a formal geometric proof of similarity of two given triangles	Work out the magnitude of a vector		
Geometry and measures	Record readings from scales to a suitable degree of accuracy	Mark parallel lines on a diagram	Record estimates to a suitable degree of accuracy	Calculate the surface area of cubes, without a net	Know that translations, rotations and reflections map objects on to congruent images	Use the formula for the circumference of a circle	Use the formulae for the circumference and area of a circle, given the circumference or area, to calculate the radius or diameter	Use and apply Pythagoras' theorem to solve problems		Calculate, and represent graphically, the sum of two vectors, the difference of two vectors and a scalar multiple of a vector		
Geometry and measures	Suggest suitable units to estimate or measure length, mass and capacity	Identify quadrilaterals from everyday usage	Use units of measurement to estimate and solve problems in everyday contexts involving length, area, volume, mass, time and angle	Calculate the perimeter and area of shapes made from rectangles	Identify simple nets of 3D shapes – regular polyhedra	Use the formulae for area of a circle, given the radius or diameter	Find the perimeters and areas of semicircles and quarter circles	Use the sine, cosine and tangent ratios to find the lengths of unknown sides in a right-angled triangle, using straight-forward algebraic manipulation, e.g. calculate the adjacent (using cosine), or the opposite (using sine or tangent ratios)		Calculate the resultant of two vectors		

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Geometry and measures	Identify all the symmetries of 2-D shapes	Know the sum of angles in a triangle is 180°	Know that measurements using real numbers depend upon the choice of unit	Calculate the surface area of simple cuboids (without use of nets)	Use straight edge and compasses to construct the mid point and perpendicular bisector of a line segment	Identify congruent shapes	Begin to use congruency to solve simple problems in triangles and quadrilaterals	Understand the language of planes, and recognise the diagonals of a cuboid		Solve geometrical problems in 2-D using vector methods		
Geometry and measures	Recognise properties of rectangles	Use correct notation for labelling lines	Use correct notation for labelling triangles	Use the basic congruence criteria for triangles (SSS, SAS, ASA, RHS)	Draw a circle given the radius or diameter	Identify 2-D shapes that are congruent or similar by reference to sides and angles	Use the information given about the length of sides and sizes of angles to determine whether triangles are congruent, or similar	Derive the fact that base angles of isosceles triangles are equal				
Geometry and measures	Recognise properties of squares	Recognise reflection symmetry	Mark perpendicular lines on a diagram	Use ruler and protractor to construct simple nets of 3D shapes, using squares, rectangles and triangles, e.g. regular tetrahedron, square-based pyramid, triangular prism	Know that translations, rotations and reflections preserve length and angle	Identify shapes which are similar, including all regular polygons with equal number of sides	Use straight edge and compass to construct the perpendicular from or to a point on a line segment	Transform 2-D shapes by simple combinations of rotations, reflections and translations, using ICT (e.g. repeated reflection, rotation or translation, reflections in the x and y axes, rotations about (0, 0))				
Geometry and measures	Draw sketches of shapes	Understand and use the language associated with rotations	Recognise and visualise the symmetry of a 2-D shape: line symmetry	Begin to use plans and elevations	Recognise that enlargements preserve angle but not length	Recognise that all corresponding angles in similar shapes are equal in size when the corresponding lengths of sides are not equal in size	Use straight edge and compasses to construct a triangle, given right angle, hypotenuse and side (RHS)	Transform 2D shapes by a more complex combinations of rotations, reflections and translations, e.g. a reflection, followed by a rotation etc				
Geometry and measures	Scale a shape on a grid (without a centre specified)	Recognise where a shape will be after translation	Calculate angles in a triangle	Solve simple problems involving units of measurement in the context of length and area		Identify more complex nets of 3D shapes including irregular polyhedra.	Draw the locus equidistant between 2 points or from a point	Add and Subtract vectors				
Geometry and measures	Understand and use the language associated with reflections	Translate a shape on a square/coordinate grid	Identify simple angle, side and symmetry properties of triangles	Use geometric language appropriately		Deduce properties of simple 3D shapes from their 2D representations	Produce shapes and paths by using descriptions of loci					
Geometry and measures	Understand and use the language associated with translations	Recognise and visualise the reflection in a mirror line of a 2-D shape	Identify angle, side and symmetry properties of simple quadrilaterals	Identify regular and irregular polygons		Analyse 3-D shapes through 2-D representations.	Use construction to find the locus of a point that moves according to a rule					
Geometry and measures	Recognise where a shape will be after reflection	Recognise and visualise – rotation about a given point (rotation point must be outside the shape)	Draw or complete diagrams with a given number of lines of symmetry			Analyse 3-D shapes through cross-sections, plans and elevations	Understand loci about a point, line and corner.					
Geometry and measures			Begin to estimate the size of angles	Draw or complete diagrams with a given order of rotational symmetry		Draw plans and elevations of 3-D shapes	Construct angles of 60°, 90°, 30°, 45°					
Geometry and measures			Use a protractor to measure obtuse angles to the nearest degree	Recognise and visualise the rotational symmetry of a 2-D shape		Use straight edge and compasses to construct the bisector of an angle	Know the formula for Pythagoras' theorem and use to find the hypotenuse					
Geometry and measures			Use a protractor to draw acute angles to the nearest degree	Identify and plot points determined by geometric information		Use straight edge and compasses to construct a triangle given three sides (SSS)	Know that the perpendicular distance from a point to a line is the shortest distance to the line					
Geometry and measures			Use a protractor to measure reflex angles to the nearest degree	Find co-ordinates of points determined by geometric information		Construct an equilateral triangle	Justify if a triangle is right-angled given its three lengths					
Geometry and measures			Measure shapes to find (perimeters and) areas	Solve geometric problems using side and angle properties of equilateral and isosceles triangles		Construct a regular hexagon inside a circle	Use vector notation for translations					
Geometry and measures				List the properties of each, or identify (name) a given shape		Begin to use the trigonometric ratios to find the size of an angle in a right-angled triangle	Use 2D Vector notation for translation					
Geometry and measures				Name all quadrilaterals that have a specific property		Draw and label diagrams from given instructions	Understand and use the language and notation associated with enlargement					
Geometry and measures				Solve simple geometrical problems using properties of triangles		Solve geometric problems using side and angle properties of equilateral, isosceles and right-angled triangles	Enlarge 2D shapes, given a fractional scale factor					
Geometry and measures				Solve simple geometrical problems using properties of quadrilaterals		Know the names of parts of a circle	Find the centre of rotation					
Geometry and measures				Identify and begin to use angle, side and symmetry properties of quadrilaterals		Know the definition of a circle	Describe a transformation					
Geometry and measures				Use a protractor to draw obtuse angles to the nearest degree		Draw circles and arcs to a given radius	Describe reflections on a coordinate grid					
Geometry and measures				Use a protractor to draw reflex angles to the nearest degree		Enlarge 2-D shapes, given a centre of enlargement and a positive whole number scale factor	Colour in missing squares to complete a reflection					
Geometry and measures				Understand and use the language associated with bearings		Explore enlargement using ICT	Recognise whether a reflection is correct					
Geometry and measures				Use bearing to specify direction		Enlarge a given shape using (0, 0) as the centre of enlargement	Express points as position vectors					
Geometry and measures				Give a bearing between the points on a map or scaled plan		Enlarge shapes with a centre other than (0, 0)	Understand and use vector notation					
Geometry and measures						Find the centre of enlargement						
Ratio, proportion and rates of change	Convert a percentage to a number of hundredths or tenths.	Read and construct scale drawings	Use fraction notation to describe parts of shapes	Divide a quantity into two parts in a given ratio, where ratio given in ratio notation	Use the unitary method to solve simple word problems involving ratio and direct proportion	Compare ratios by changing them to the form 1 : m or m : 1	Interpret and write ratios to describe a situation	Write a ratio as a linear function	Use expressions of the form $y \propto x^2$	Solve problems involving inverse proportion using graphs by plotting and reading values from graphs	Recognise sketch and interpret graphs of exponential functions $y = k^x$ for positive values of k and integer values of x	Calculate the new volume of a shape after enlargement
Ratio, proportion and rates of change			Recognise the equivalence of percentages, fractions and decimals	Convert a larger whole number metric unit to a smaller unit (e.g. 3 kilograms to 3000 grams)	Divide a quantity into more than two parts in a given ratio	Solve a ratio problem in context	Understand and use compound measures (density, speed, pressure)	Extend to simple conversions of compound measures (e.g. convert 2 m/s to km/hr)	Identify direct proportion from a table of values by comparing ratios of values	Solve problems involving inverse proportionality, including problems where y is inversely proportional to the square of x	Find points that divide a line in a given ratio, using the properties of similar triangles	
Ratio, proportion and rates of change			Define percentages as number of parts per hundred	Convert between simple metric units.	Convert one metric unit to another, including decimals (e.g. 3250 grams to 3.25 kilograms, or 3.25kg to 3250g)	Divide a given quantity into two parts in a given part:part or part: whole ratio	Solve problems using constant rates and related formulae	Convert imperial units to imperial units		Calculate an unknown quantity from quantities that vary in direct or inverse proportion		

Ratio, proportion and rates of change			Draw lines and shapes to scale	Convert a smaller whole number metric unit to a larger one (e.g. 3000 grams to 3 kilograms)	Use fraction notation to express a smaller whole number as a fraction of a larger one	Write as ratio as a fraction	Solve problems involving compound measures	Convert between metric and imperial measures		Set up and use equations to solve word and other problems involving direct or inverse proportion		
Ratio, proportion and rates of change			Use and interpret maps and scale drawings, using a variety of scales and units	Express one number as a fraction of another	Use a ratio to find one quantity when the other is known	Know rough metric equivalents of imperial measures in daily use (feet, miles, pounds, pints, gallons)	Write lengths, areas and volumes of two shapes as ratios in simplest form	Use graphs to calculate measures including unit price, average speed, distance, time, acceleration		Calculate the new area of a shape after enlargement		
Ratio, proportion and rates of change			Estimate length using a scale diagram	Express the division of a quantity into a number of parts as a ratio	Use proportional reasoning to solve a problem	Convert between area measures (e.g. mm² to cm², cm² to m², and vice versa)	Estimate conversions	Use percentages in real-life situations: compound interest, depreciation, percentage profit and loss				
Ratio, proportion and rates of change				Use percentages to compare simple proportions	Use strategies for finding equivalent fractions, decimals and percentages involving decimal percentages and decimals greater than 0	Convert between metric measures of volume and capacity eg 1 cm³ = 1 ml	Use algebraic methods to solve problems involving variables in direct proportion	Calculate repeated proportional change				
Ratio, proportion and rates of change				Recall equivalent fractions, decimals and percentages including for fractions that are greater than 1. Match across all 3 types, and need to be simple fractions (1/2, 1/4, 1/5, 1/10)	Find the outcome of a given percentage increase	Set up equations to show direct proportion	Use expressions of the form y α 1/x	Find the original amount after a percentage change (reverse percentages)				
Ratio, proportion and rates of change				Express one given number as a percentage of another	Find the outcome of a given percentage decrease	Use expressions of the form y α x	Interpret the gradient of a straight line graph as a rate of change	Use calculators for reverse percentage calculations by doing an appropriate division				
Ratio, proportion and rates of change				Find a percentage of a quantity using a multiplier	Use a multiplier to increase or decrease by a percentage	Identify direct proportion from a graph	Use calculators to explore exponential growth and decay	Understand that the ratio of any two sides is constant in similar right-angled triangles				
Ratio, proportion and rates of change				Interpet percentages and percentage change as a fraction or a decimal	Use percentages greater than 100%	Recognise graphs showing constant rates of change, average rates of change and variable rates of change	Use compound interest	Understand the implications of enlargement for perimeter				
Ratio, proportion and rates of change				Use ratio notation	Express one quantity as a percentage of another	Use a unitary method, e.g. if £40 is 60%, find 1% by dividing by 60 and then 100% by multiplying by 100. Give them the scaffolding to answer the question	Represent repeated proportional change using a multiplier raised to a power	Identify the scale factor of an enlargement as the ratio of the lengths of any two corresponding line segments				
Ratio, proportion and rates of change				Reduce a ratio to its simplest form	Simplify a ratio expressed in different units	Compare two quantities using percentages, including a range of calculations and contexts	Understand direct proportion as equality of ratios	Enlarge 2-D shapes and recognise the similarity of resulting shapes				
Ratio, proportion and rates of change				Reduce ratios in the simplest form, including three-part ratios		Use percentages in real-life situations: VAT, value of profit or loss, simple interest, income tax calculations	Use measures in ratio and proportion problems (currency conversion, rates of pay, best value)					
Ratio, proportion and rates of change				Use and interpret maps, using proper map scales (1 : 25 000)			Express a multiplicative relationship between two quantities as a ratio or a fraction					
Ratio, proportion and rates of change				Simplify a ratio expressed in fractions or decimals			Use the unitary method for an inverse operation, e.g. If I know an item was 80% of the original cost in a sale, find the original price					
Ratio, proportion and rates of change				Write ratios in the form 1: m or m: 1			Use and interpret scale drawings, where scales use mixed units, and drawings aren't done on squared paper, but have measurements marked on them.					
Ratio, proportion and rates of change							Know that enlargements of 2D shapes produce similar shapes					