Week	7	8	9	10	11
1	Ordering numbers including negatives	Ordering numbers including negatives	order positive and negative integers,	know and apply formulae to calculate: area of triangles, parallelograms, trapezia;	solve quadratic equations algebraically by factorising
1	Odering decimals	Odering decimals	apply the four operations, including formal written methods, to integers, decimals – all both positive and negative	calculate perimeters of 2D shapes,	find approximate solutions using a graph
1	Written methods of calculation	Written methods of calculation, Including decimals and negatives	use the symbols =, ≠, <, >, ≤, ≥	identify and apply circle definitions and properties, including: centre, radius, chord, diameter, circumference	
1		Extend to worded problems		including: tangent, arc, sector and segment	
2	Intro to algebraic notation	Intro to algebraic notation	collecting like terms	know the formulae: circumference of a circle, area of a circle	translate simple situations or procedures into algebraic expressions or formulae
2	Collecting like terms	Collecting like terms	multiplying a single term over a bracket	areas and perimeters of circles and composite shapes	solve linear inequalities in one variable
2	expanding a bracket (numerical only)	expanding a bracket (numerical only)	taking out common factors	calculate exactly with multiples of π	represent the solution set on a number line
3	BIDMAS	Square number sequence. Calculating by squaring numbers, BIDMAS	simplifying expressions involving sums, products and powers, including the laws of indices	round numbers and measures to an appropriate degree of accuracy (eg to a specified number of decimal places or significant figures)	derive an equation (or two simultaneous equations), solve the equation(s) and interpret the solution
3	Square numbers and square roots			estimate answers	
3				check calculations using approximation and estimation, including answers obtained using technology	

4	Naming types of angles. Caclculating angles on straight lines, points, opposite angles	Naming types of angles. Caclculating angles on straight lines, points, opposite angles	apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles	where appropriate, interpret simple expressions as functions with inputs and outputs	use compound units such as density and pressure
4			understand and use alternate and corresponding angles on parallel lines	know the difference between an equation and an identity	
4				argue mathematically to show algebraic expressions are equivalent, and use algebra to support and construct arguments	
5	Language of probability. Using the probability scale	Language of probability. Using the probability scale	record, describe and analyse the frequency of outcomes of probability experiments using tables and frequency trees	expanding products of two binomials	use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle)
5	Finding theoretical probabilities	Finding theoretical probabilities	Find expected frequency	factorising quadratic expressions of the form x_2+bx+c , including the difference of two squares	use these to construct given figures and solve loci problems
5	Writing probabilities as fractions	Writing probabilities as fractions and decimals.	relate relative expected frequencies to theoretical probability, using appropriate language and the 0 to 1 probability scale	change freely between related standard units (eg time, length, area, volume/capacity, mass) and compound units (eg speed, rates of pay, prices) in numerical contexts	know that the perpendicular distance from a point to a line is the shortest distance to the line
5				compound units (eg density, pressure)	
5				in numerical and algebraic contexts	
6	Revision and test	Revision and test	Revision and test	Revision and test	Revision and test
7	Feedback and problem solving	Feedback and problem solving	Feedback and problem solving	Feedback and problem solving	Feedback and problem solving

8	Drawing and reading bar charts and pictograms	Drawing and reading bar charts and pictograms	interpret and construct tables, charts and diagrams, including frequency tables, bar charts, pie charts and pictograms for categorical data, vertical line charts for ungrouped discrete numerical data, and know their appropriate use	interpret percentages and percentage changes as a fraction or a decimal, and interpret these multiplicatively	apply angle facts, triangle congruence, similarity and properties of quadrilaterals to conjecture and derive results about angles and sides, including Pythagoras' theorem and the fact that the base angles of an isosceles triangle are equal, and use known results to obtain simple proofs
8		Pie charts		express one quantity as a percentage of another	
8				compare two quantities using percentages	
8				work with percentages greater than 100%	
9	Line graphs, stats project - graphs of real data	Stats project - graphs of real data. Simple questionnaires	interpret and construct tables, charts and diagrams, including frequency tables, bar charts, pie charts and pictograms for categorical data, vertical line charts for ungrouped discrete numerical data, and know their appropriate use	solve problems involving percentage change, including percentage increase/decrease and original value problems, and simple interest including in financial mathematics	Transformations and enlargement including fractional scale factors
10	Recognising fractions as parts of a whole	Simplifying fractions	apply the four operations, including formal written methods, to simple fractions (proper and improper), and mixed numbers – all both positive and negative	use conventional terms and notations: points, lines, vertices, edges, planes, parallel lines, perpendicular lines, right angles, polygons, regular polygons and polygons with reflection and/or rotation symmetries	Area revision including calculate arc lengths, angles and areas of sectors of circles
10	Recognising equivalent fractions	Begin to add and subtract fractions		use the standard conventions for labelling and referring to the sides and angles of triangles	
10				draw diagrams from written description	

11	Symmetry - line and rotational and reflections	Symmetry - line and rotational and reflections	derive and use the sum of angles in a triangle (eg to deduce and use the angle sum in any polygon, and to derive properties of regular polygons)	identify, describe and construct congruent and similar shapes, including on coordinate axes, by considering rotation, reflection, translation and enlargement	Volume revision including surface area and volume of spheres, pyramids, cones and composite solids
12	Listing outcomes from an event	Listing outcomes from combinations of events	enumerate sets and combinations of sets systematically, using tables, grids, Venn diagrams	Averages and range (including from frequency tables, grouped data and consideration of outliers informally)	Similarity
12	Calculating probabilities from lists	Calculating probabilities from lists and sample space diagrams	construct theoretical possibility spaces for single and combined experiments with equally likely outcomes and use these to calculate theoretical probabilities		apply addition and subtraction of vectors, multiplication of vectors by a scalar, and diagrammatic and column representations of vectors
13	Revision and test	Revision and test	Revision and test	Revision and test	Revision and test
14	Feedback and problem solving	Feedback and problem solving	Feedback and problem solving	Feedback and problem solving	Feedback and problem solving
15	Creating fractions from descriptions	Using fractions to express quantities as being parts of another	express one quantity as a fraction of another, where the fraction is less than 1 or greater than 1	use and interpret scatter graphs of bivariate data	
15	Solving simple proportion problems	Solving proportion problems (unitary)	use ratio notation, including reduction to simplest form	recognise correlation	
15	Express quantities using ratio. Use ratio to solve problems	Express quantities using ratio. Use ratio to solve problems	divide a given quantity into two parts in a given part : part or part : whole ratio	know that it does not indicate causation	
15			express the division of a quantity into two parts as a ratio	draw estimated lines of best fit	
				interpolate and extrapolate apparent trends whilst knowing the dangers of so doing	

16	**Financial calculations. Working with money. Recognise which option is best value.**	Ratio and problem solving - value for money	apply ratio to real contexts and problems (such as those involving conversion, comparison, scaling, mixing, concentrations) Best buy, better value problems	derive and apply the properties and definitions of: special types of quadrilaterals, including square, rectangle, parallelogram, trapezium, kite and rhombus	
				and triangles and other plane figures using appropriate language	
				use the basic congruence criteria for triangles (SSS, SAS, ASA, RHS)	
17	generate terms of a sequence from either a term-to-term or a position-to-term rule	generate terms of a sequence from either a term-to-term or a position-to-term rule	generate terms of a sequence from either a term-to-term or a position-to-term rule	express a multiplicative relationship between two quantities as a ratio or a fraction	
17	Sequences from patterns	Use sequences from patterns to make predictions	recognise and use sequences of triangular, square and cube numbers and simple arithmetic progressions	understand and use proportion as equality of ratios	
17	Finbonacci sequences	Fibonacci problem solving		relate ratios to fractions and to linear functions	
17		Nth term		use compound units such as speed, rates of pay, unit pricing	
17				compare lengths, areas and volumes using ratio notation	
18	Problem solving week	Problem solving week	deduce expressions to calculate the n th term of linear sequences	solve problems involving direct and inverse proportion, including graphical and algebraic representations	
18			including Fibonacci-type sequences, quadratic sequences, and simple geometric progressions (r_n where n is an integer and r is a rational number > 0)		

19	**Substituting into simple algebraic expressions**	Substituiting into 2 (or more) step algebraic expressions	substitute numerical values into formulae and expressions, including scientific formulae	solve linear equations in one unknown algebraically	
19	**Use worded formula in real life contexts**	Use algebra to form expressions from descriptions	understand and use the concepts and vocabulary of expressions, equations, formulae, inequalities, terms and factors	including those with the unknown on both sides of the equation	
19			to include identities		
20	<mark>Revision and Test</mark>	<mark>Revision and Test</mark>	<mark>Revision and Test</mark>	<mark>Revision and Test</mark>	
21	Feedback and problem solving	Feedback and problem solving	Feedback and problem solving	Feedback and problem solving	
22	Multiply/divide by 10, 100	Multiply/divide by 10,100,1000, including decimals of any size	understand and use place value (eg when working with very large or very small numbers, and when calculating with decimals)	solve two simultaneous equations in two variables (linear/linear) algebraically	
22	Rounding	Rounding (include any number of decimal places)	use positive integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5	find approximate solutions using a graph	
22	BIDMAS	BIDMAS	calculate with roots, and with integer indices		
23	Problem Solving Week	Problem Solving Week	use conventional notation for priority of operations, including brackets, powers, roots and reciprocals	interpret equations that describe direct and inverse proportion	
23			recognise and use relationships between operations, including inverse operations (eg cancellation to simplify calculations and expressions)	recognise and interpret graphs that illustrate direct and inverse proportion	
24	Using a protractor and measuring accurately with a ruler	Using a protractor and measuring accurately with a ruler. Begin to draw triangles accurately	measure line segments and angles in geometric figures, including interpreting maps and scale drawings and use of bearings	interpret the gradient of a straight-line graph as a rate of change	

24	Use scale drawings			understand that X is inversely proportional to Y is equivalent to X is proportional to $\frac{1}{Y}$	
25	Enlargement of shapes	Scale drawings. Enlargement of shapes. Formal use of scale factor language	use scale factors, scale diagrams and maps	set up, solve and interpret the answers in growth and decay problems, including compound interest	
26	Revision and Test	Revision and Test	Revision and Test	Revision and Test	
27	Feedback and problem solving	Feedback and problem solving	Feedback and problem solving	Feedback and problem solving	
28	Using real world formulae	Using formulae in context, including multi step formulae from descriptions	Pythagoras	and the trigonometric ratios, $\sin\theta=\frac{opposite}{hypotenuse}$, $\cos\theta=\frac{adjacent}{hypotenuse}$ and $\tan\theta=\frac{opposite}{adjacent}$ apply them to find angles and lengths in right-angled triangles in two dimensional figures	
28	Solving linear equations (worded and basic algebraic	Solving linear equations		know the exact values of $\sin\theta$ and $\cos\theta$ for θ = 0°, 30°, 45° , 60° and 90°	
28		Including 2 step equations		know the exact value of $\tan\theta$ for θ = 0°, 30°, 45° , 60°	
29	Rotation and translation	Rotation and translation (introduce vector notation)	understand and use standard mathematical formulae including use of formulae from other subjects in words and using symbols.	calculate the probability of independent and dependent combined events, including using tree diagrams and other representations, and know the underlying assumptions	
29			rearrange formulae to change the subject		

30	Factors, multiples, factor pairs, prime numbers	HCF, LCM, factor trees	use the concepts and vocabulary of prime numbers, factors (divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation, including using product notation and the unique factorisation theorem	Charts and graphs - appropriate graphical representation involving discrete, continuous and grouped data	
31	Converting between fractions, decimals and percentages	Converting between fractions, decimals and percentages, including calculator methods	work interchangeably with terminating decimals and their corresponding fractions (such as 3.5 and $7/2$ or 0.375 and $3/8$)	calculate with and interpret standard form $A \times 10^n$, where $1 \leq A < 10$ and n is an integer	
31			Ordering fractions and decimals		
32	<mark>Revision and Test</mark>	<mark>Revision and Test</mark>	<mark>Revision and Test</mark>	<mark>Revision and Test</mark>	
33	Coordinates - plotting in 1 and then 4 quadrants	Coordinates - plotting in 1 and then 4 quadrants	work with coordinates in all four quadrants	apply systematic listing strategies	
33	Drawing horizontal and vertical lines	Drawing horizontal and vertical lines	plot graphs of equations that correspond to straight-line graphs in the coordinate plane	calculate exactly with fractions	
33	Drawing linear graphs using a table of values	Drawing linear graphs using a table of values	identify and interpret gradients and intercepts of linear functions graphically and algebraically	interpret fractions and percentages as operators	
34	Calculating percentages of amounts using fraction equivalents	Calculating percentages of amounts, calc and non calc	use the form $y = mx + c$ to identify parallel lines	use inequality notation to specify simple error intervals due to truncation or rounding	
34	Increase/decrease by percentages	Increase/decrease by percentages, Including calculator methods	find the equation of the line through two given points, or through one point with a given gradient	apply and interpret limits of accuracy	

35	Area and perimeter, volume of cuboids	Area and perimeter, volume of compound shapes	use standard units of mass, length, time, money and other measures (including standard compound measures) using decimal quantities where appropriate Metric conversions. Metric/imperial conversions will be given in the question	simplify and manipulate algebraic expressions (including those involving surds)	
36			identify properties of the faces, surfaces, edges and vertices of: cubes, cuboids, prisms, cylinders, pyramids, cones and spheres	recognise, sketch and interpret graphs of linear functions	
36	Language of shapes and solids	Language of shapes and solids	interpret plans and elevations of 3D shapes	recognise, sketch and interpret graphs of quadratic functions	
36	Plans and elevations, using isometric paper	Plans and elevations, using isometric paper	construct and interpret plans and elevations of 3D shapes		
37	Design a game - probability in practice	Problem solving/investigation week	apply the property that the probabilities of an exhaustive set of outcomes sum to 1	including simple cubic functions and the reciprocal function $y = \frac{1}{x}$ with $x \neq 0$	
37			apply the property that the probabilities of an exhaustive set of mutually exclusive events sum to 1	plot and interpret graphs, and graphs of non-standard functions in real contexts, to find approximate solutions to problems such as simple kinematic problems involving distance, speed and acceleration	
37			understand that empirical unbiased samples tend towards theoretical probability distributions, with increasing sample size	including reciprocal graphs	
38	Revision and test	Revision and test	Revision and test	Revision and test	
39	Feedback and problem solving	Feedback and problem solving	Feedback and problem solving	Feedback and problem solving	