

Week	7	8	9	10
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;
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,
1	Written methods of calculation	Written methods of calculation, Including decimals and negatives	use the symbols =, \neq , $<$, $>$, \leq , \geq	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
2	Collecting like terms	Collecting like terms	multiplying a single term over a bracket	areas and perimeters of circles and composite shapes
2	expanding a bracket (numerical only)	expanding a bracket (numerical only)	taking out common factors	calculate exactly with multiples of π
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)

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. Calculating angles on straight lines, points, opposite angles	Naming types of angles. Calculating 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
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
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

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
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
7	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
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
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
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

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)
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	
13	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
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	Fibonacci 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	Substituting 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	Revision and Test	Revision and Test	Revision and Test	Revision and Test
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, $\sin\theta = \frac{\text{opposite}}{\text{hypotenuse}}$, $\cos\theta = \frac{\text{adjacent}}{\text{hypotenuse}}$ and $\tan\theta = \frac{\text{opposite}}{\text{adjacent}}$ 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 $\theta = 0^\circ, 30^\circ, 45^\circ, 60^\circ$ and 90°
28		Including 2 step equations		know the exact value of $\tan\theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ, 60^\circ$
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	

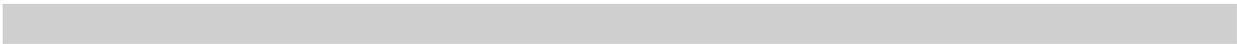
30	Factors, multiples, factor pairs, prime numbers	HCF, LCM, factor trees	use the concepts and vocabulary of prime numbers, factors (divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation, including using product notation and the unique 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 $\frac{7}{2}$ or 0.375 and $\frac{3}{8}$)	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	Revision and Test	Revision and Test	Revision and Test	Revision and Test
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







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solve quadratic equations algebraically by factorising

find approximate solutions using a graph

translate simple situations or procedures into algebraic expressions or formulae

solve linear inequalities in one variable

represent the solution set on a number line

derive an equation (or two simultaneous equations), solve the equation(s) and interpret the solution

use compound units such as density and pressure
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)
use these to construct given figures and solve loci problems

know that the perpendicular distance from a point to a line is the shortest distance to the line

Revision and test

Feedback and problem solving

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

Transformations and enlargement including fractional scale factors

Area revision including calculate arc lengths, angles and areas of sectors of circles

Volume revision including surface area and volume of spheres, pyramids, cones and composite solids

