

GCSE Maths Revision Checklist - Higher

Unit	Unit / Topic	Complete
1	Calculations, checking and rounding Four operations with decimals and whole numbers Use one calculation to find the answer to another Product rule Rounding & estimation	
	Indices, roots, reciprocals and hierarchy of operations Use index notation including fractional and negative powers Order of operations	
	Factors, multiples and primes Identify factors, multiples and prime numbers Find prime factorisation of a number (& write in index form) Find common factors & highest common factors Find LCM of two (or three) numbers	
	Standard form and surds Index laws to simplify & calculate the value of an expression Convert between ordinary numbers and standard form Work with the four operations in standard form Use a calculator with indices and standard form Simplify surd expressions	
2	Algebra: the basics Write an expression Collect like terms Simplify expressions Use index laws Expand single & double brackets Factorise single brackets Factorise quadratic expressions Factorise quadratic expressions using difference of two squares	
	Setting up, rearranging and solving equations Set up expressions and equations Substitute into expressions, equations and formulae Solve linear equations and inequalities Change the subject of a formula Iteration	
	Sequences Continue sequences inc from pictures Find the nth term Use nth term rule to generate or continue a sequence Find the nth term of a quadratic sequence Distinguish between arithmetic and geometric sequences Recognise and use simple geometric progressions Find term to term rule of a geometric sequence, including negative, fraction and decimal terms	
3	Averages and range Use various charts & diagrams in relation to averages Two way tables Calculate the mean, mode, median and range from a list Median, mean and range from a table (discrete data) Modal class, median and estimate of the mean from grouped data Draw and interpret stem and leaf diagrams	
	Representing and interpreting data Know which chart or diagram to use for different data sets Draw and interpret bar charts (inc dual & composite) Draw and interpret line graphs (vertical & time-series) Draw and use pie charts Find mode & total frequency from a pie chart Compare two pie charts Produce and interpret histograms Compare distributions	
	Scatter graphs Draw and use scatter graphs & lines of best fit Identify outliers & correlation	

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4	Fractions Equivalent fractions including simplifying & comparing Express one amount as a fraction of another Convert between mixed numbers and improper fractions Four operations using fractions Find a fraction of an amount Convert between recurring decimals to fractions and vice versa	
	Percentages Use fraction to decimal conversions Recognise terminating & recurring decimals Convert between fractions, decimals & percentages Order & compare fractions, decimals & percentages Write one amount as a percentage of another Calculate percentage of an amount Calculate percentage increase/decrease Use decimals to find quantities (multiplier methods) Increase / decrease an amount by a percentage Reverse percentages	
	Ratio and proportion Write ratios in their simplest form (including in context) Share a quantity in a given ratio (including 3-part ratios) Use a ratio to find one quantity when another is known Compare ratios Write ratio in the form 1:n or n:1 Write a ratio as a fraction and vice versa Write a ratio as a linear function Use direct & inverse proportion (and recognise graphically) Recipes Currency conversions	
5	Polygons, angles and parallel lines Measure and draw lines, angles, 2D & 3D shapes Identify and name 2D shapes and their properties Identify parallel and perpendicular lines Use angle facts - around a point, straight line, vertically opposite etc Use angle properties of parallel lines Use sum of interior angles for irregular & regular polygons Use sum of exterior angles for regular polygons Use the side/angle properties of compound shapes made up of triangles, lines and quadrilaterals	
	Pythagoras' Theorem and trigonometry Pythagoras' Theorem Trigonometry - sin, cos and tan Know exact trig values	
6	Graphs: the basics and real-life graphs Use coordinates in all four quadrants Conversion graphs Fixed cost and cost per unit graphs Distance / time and Velocity/ time graphs Midpoints of a line segment Calculate the length of a line segment	
	Linear graphs and coordinate geometry Draw, use and interpret (inc gradient) straight line graphs Find the equation of a line through two points Find the equation of a line (including from a graph) Identify parallel and perpendicular lines Generate equations of parallel and perpendicular lines	
	Quadratic, cubic and other graphs Plot quadratic graphs Find solutions, intercepts & turning points of a quadratic graph Recognise and sketch cubic functions Recognise and sketch reciprocal functions Draw circles, centre the origin, equation $x^2 + y^2 = r^2$.	



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7	Perimeter, area and circles Convert between metric measures Read scales Perimeter of 2D shapes Area of 2 D shapes and compound shapes Name parts of a circle Recall & use formula for area and circumference of a circle Arcs and sectors	
	3D forms and volume, cylinders, cones and spheres Identify and name 3D forms and their properties Volume of a cuboid Volume of a prism Volume of a composite forms Surface area of prisms & simple compound forms Surface area & volume of a cylinder Spheres, pyramids, cones, frustums and composite solids.	
	Accuracy and bounds Calculate the upper & lower bounds of numbers Calculate the upper & lower bounds of an expression Use error intervals (inc truncation)	
8	Transformations Transform and describe translations, rotations & reflections Transform and describe enlargements inc fractional and negative SF Transform shapes using a combination of transformations Describe transformations when using multiple transformations Describe the changes & invariance achieved by combinations of transformations	
	Constructions, loci and bearings Draw plans and elevations of shapes Draw a 3D form given its plan and elevations Use maps, scale drawings & bearings Standard constructions Find regions satisfying a combination of loci Find and describe regions satisfying a combination of loci, including in 3D Use constructions to solve loci problems including with bearings	
9	Solving quadratic and simultaneous equations Set up and solve quadratic equations Completing the square Quadratic Formula Solve simultaneous equations algebraically and graphically (linear/linear) Solve simultaneous equations algebraically and graphically (linear/quadratic) Solve simultaneous equations algebraically and graphically (linear/circle)	
	Inequalities On a number line Listing numbers that satisfy an inequality Solving inequalities and show the solution on a number line Represent and interpret inequalities graphically	
10	Probability Probability scale Listing outcomes Two-way tables Frequency trees Use 1-p Relative frequency Sample space diagrams Venn diagrams & set notation Probability tree diagrams	
11	Multiplicative reasoning Best value Use compound measures: Pressure, Density & Speed Percentage profit / loss Reverse percentages Simple interest Compound interest & growth Depreciation & decay Rates of pay	

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12	Similarity and congruence in 2D and 3D Use congruence criteria for triangles (SSS, SAS, ASA and RHS); Use formal geometric proof involving similarity & congruence Identify similar shapes Identify scale factors and find missing lengths in similar shapes Use length, area and volume scale factors Area and surface area of frustums	
13	Graphs of trigonometric functions Recognise, sketch and interpret graphs of the trigonometric functions Exact trig values Transforming graphical functions	
	Further trigonometry Formula for area of a triangle Sine rule in 2D and 3D Cosine rule in 2D and 3D Pythagoras Theorem in 3D	
14	Collecting data Types of data Bias and eliminating bias	
	Cumulative frequency, box plots and histograms Construct & interpret cumulative frequency tables/graphs Median, quartiles & interquartile range from cumulative diagrams Construct & interpret box plots Median, quartiles & interquartile range from box plots Construct & histograms Estimate the mean and median from a histogram	
15	Quadratics, expanding more than two brackets, sketching graphs, graphs of circles, cubes and quadratics Sketch quadratics Identify roots, turning points and intercepts of quadratic graphs Completing the square Expand the product of more than two linear expressions Sketch cubics Solve simultaneous equations graphically Solve and represent quadratic inequalities	
16	Circle theorems Parts of a circle Prove, recall and apply circle theorems	
	Circle geometry Recognise and construct the graph of a circle Find the equation of a tangent to a circle	
17	Changing the subject of formulae (more complex), algebraic fractions, solving equations arising from algebraic fractions, rationalising surds, proof Rationalise the denominator involving surds Simplify, multiply and divide algebraic fractions Change the subject of a complex formula Algebraic Proof Functions & function notation Inverse functions Composite functions	
18	Vectors and geometric proof Understand represent and use vector notation, including column notation Find the length of a vector Calculate the resultant of a vector Geometric problems in 2D where vectors are divided in a given ratio. Geometrical proofs to prove points are collinear & vectors/lines are parallel	
19	Reciprocal and exponential graphs; Gradient and area under graphs Recognise, sketch and interpret reciprocal graphs Calculate and interpret the area under a curve Calculate and interpret gradient of a tangent to a curve	
	Direct and inverse proportion Recognise and interpret graphs of direct & inverse proportion Set up and use formulae for direct & inverse proportion	

