

GCSE Maths Higher Gold Stage Revision Checklist

Number	Use the index laws with fractional, negative and zero powers in simplifying numerical and algebraic expressions.	
	Use surds in exact calculations, without a calculator. Simplify expressions involving surds including rationalising a denominator.	
	Convert a recurring decimal to a fraction and vice versa.	
	Use a calculator to find the upper and lower bounds of calculations, particularly in the context of measurement.	
	Use calculators to explore exponential growth and decay.	

Algebra	Form and use equations involving direct or inverse proportion (for $y \propto x$, $y \propto x^2$, $y \propto \frac{1}{x}$, $y \propto \frac{1}{x^2}$).	
	Solve quadratic equations by completing the square and using the quadratic equation formula.	
	Solve exactly, by elimination of an unknown, two simultaneous equations in two unknowns, one of which is linear, the other equation quadratic in one unknown. Find the points of intersection of straight lines with quadratic curves, knowing that these are the approximate solutions of the corresponding simultaneous equations.	
	Manipulate algebraic expressions including fractions and solve the related equations. Understand the difference between an equation and an identity.	
	Draw, sketch and recognise the function $y = kx$ for integer values of x and simple positive values of k , the trigonometric functions $y = \sin x$ and $y = \cos x$ for any angle.	
	Apply to the graph of $y = f(x)$, for linear and quadratic $f(x)$, the transformations $y = f(x) + a$, $y = f(ax)$, $y = f(x + a)$, $y = af(x)$.	

Geometry and Measures	Understand and use SSS, SAS, ASA and RHS condition to prove the congruence of triangles.	
	Use Pythagoras' theorem and trigonometrical relationships in 3-D contexts, including using 3-D coordinates and finding the angles between a line and a plane.	
	Calculate the area of a triangle using $\frac{1}{2} ab \sin C$. Use the sine and cosine rules in 2-D and 3-D contexts.	
	Find the lengths of arcs, areas of sectors and segments of circles, and the surface areas and volumes of pyramids, cones and spheres; use pi in exact calculations. Solve mensuration problems involving more complex shapes and solids.	
	Understand and use vector notation. Calculate, and represent graphically: the sum of two vectors, the difference of two vectors and a scalar multiple of a vector. Calculate the resultant of two vectors. Understand and use the commutative and associative properties of vector addition. Use vector methods in 2-D.	

Statistics	Know when to add or multiply probabilities: if A and B are mutually exclusive, then the probability of A or B occurring is $P(A) + P(B)$. If A and B are independent events, the probability of A and B occurring is $P(A) \times P(B)$.	
	Draw and interpret histograms for grouped data. Understand frequency density.	
	Interpret and compare a wide range of data sets (including grouped discrete and continuous data) and draw conclusions.	
	Select a representative sample from a population using random and stratified sampling. Criticise sampling methods.	