

EMC Specification GCSE Edexcel Maths



Algebra			
A2.1	Simplify and manipulate algebraic expressions (including those involving surds and algebraic fractions) by: • collecting like terms • multiplying a single term over a bracket • expanding products of two or more binomials • factorising quadratic expressions of the form $2ax^2 + bx + c$, including the difference of two squares; • factorising cubic expressions of the form $3x^3 + 2ax^2 + bx + c$ • simplifying expressions involving sums, products and powers, including the laws of indices	A2.8	Plot and interpret graphs (including reciprocal graphs and exponential 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
A2.2	Use algebra to support and construct proofs	A2.9	Calculate or estimate gradients of graphs and areas under graphs (including quadratic and other nonlinear graphs), and interpret results in cases such as distance-time graphs, velocity-time graphs and graphs in financial contexts (this does not include calculus)
A2.3	Identify a function's features including the asymptotes, domain and range. Interpret the 'inverse function'; interpret the succession of two functions as a 'composite function' (the use of formal function notation is expected)	A2.10	Recognise and use the equation of a circle; find the equation of a tangent to a circle at a given point. Recognise, sketch and use the equation of a circle
A2.4	Identify parallel and perpendicular linear lines in the forms $y = mx + c$, $ax + by = c$, and $y - y_1 = m(x - x_1)$	A2.11	Solve linear equations in one unknown algebraically (including those with the unknown on both sides of the equation); find approximate solutions using a graph

A2.5	Identify and interpret roots, intercepts, turning points of quadratic functions graphically; deduce roots algebraically and turning points by completing the square	A2.12	Solve quadratic equations (including those that require rearrangement) algebraically by factorising, by completing the square and by using the quadratic formula
A2.6	Recognise, sketch and interpret graphs of linear functions, quadratic functions, simple cubic and quartic functions, the reciprocal function $y = \frac{1}{x}$ and $y = \frac{2}{x}$ where $0 < x \leq a$ and a is an integer, exponential functions $y = k^x$ and the trigonometric functions (with arguments in degrees) e.g. $\sin y = \dots$, $\cos(30^\circ) y = \dots$ and $\tan 2 y = \dots$ for angles of any size	A2.13	Solve two simultaneous equations in two variables (linear/linear or linear/quadratic) algebraically or graphically (including those that require rearrangement)
A2.7	Sketch transformations of a given function	A2.14	Solve linear inequalities in one or two variable(s), and quadratic inequalities in one variable; represent the solution set on a number line, using set notation and on a graph

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Geometry				Probability		Number	
G4.1	Apply and prove the standard circle theorems concerning angles, radii, tangents and chords, and use them to prove related results	G4.4	Know and apply the sine rule and cosine rule, to find unknown lengths and angles in two and three dimensional figures	P5.1	Enumerate sets and combinations of sets systematically, using tables, grids, Venn diagrams and tree diagrams	N1.1	Calculate with integer, negative and fractional indices Understand the term "real numbers"
G4.2	Know the formulae for: Pythagoras' theorem $a^2 + b^2 = c^2$, and the trigonometric ratios; apply them to find angles and lengths in right-angled triangles and, where possible, general triangles in two and three dimensional figures	G4.5	Know and apply Area $\frac{1}{2} ab \sin C$ to calculate the area, sides or angles of any triangle	P5.2	Calculate the probability of independent and dependent combined events, including using tree diagrams and other representations, and know the underlying assumptions, e.g. for two independent events A and B $P(A \cap B) = P(A)P(B)$	N1.2	Calculate exactly with surds; simplify surd expressions involving squares, (e.g. $12\sqrt{4} \times 3\sqrt{2} = 24\sqrt{8} = 48\sqrt{2}$) and rationalise denominators
G4.3	Know the exact values of $\sin \theta$ and $\cos \theta$ for $0^\circ = \theta$, 30° , 45° , 60° and 90° ; know the exact value of $\tan \theta$ for $0^\circ = \theta$, 30° , 45° and 60°	G4.6	Apply addition and subtraction of vectors, multiplication of vectors by a scalar, and diagrammatic and column representations of vectors; use vectors to construct geometric arguments and proofs	P5.3	Calculate and interpret conditional probabilities through representation using expected frequencies with twoway tables, tree diagrams an	Ratio	
						R3.1	Interpret the gradient at a point on a curve as the instantaneous rate of change; apply the concepts of average and instantaneous rate of change (gradients of chords and tangents) in numerical, algebraic and graphical contexts (this does not include calculus)