Specification GCSE AQA Further Maths

1. Number

1.1	Calculations of numbers, fractions, decimals, percentages, ratio, proportion
1.2	Product rule for counting
1.3	Surds

2. Algebra

2.1	Basic algebra
2.2	Function Notation
2.3	Domain and range of a function
2.4	Composite functions
2.5	Inverse functions
2.6	Expanding brackets and collecting like terms
2.7	Expand (a + b)n for positive integer n
2.8	Factorise fully
2.9	Manipulation of rational expressions
2.10	Rearrange formulae
2.11	Use of the factor theorem
2.12	Completing the square
2.13	Drawing and sketching of functions
2.14	Solution of linear and quadratic equations
2.15	Simultaneous equations
2.16	Algebraic solution of linear equations in
2.17	Solution of linear and quadratic inequalities
2.18	Index laws, including fractional and negative
2.19	Algebraic proof
2.20	Using nth terms of sequences
2.21	nth terms of linear sequences
2.22	nth terms of quadratic sequences

3. Coordinate Geometry

3.1	Gradients
3.2	Parallel and perpendicular lines
3.3	Pythagoras' theorem
3.4	Use ratio to find the coordinates of a point
3.5	The equation of a straight line
3.6	Draw a straight line from given information
3.7	Circles $x^2 + y^2 = r^2$
3.8	Understand that $(x - a)^2 + (y - b)^2 = r^2$
3.9	The equation of a tangent at a point on a circle

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4. Calculus	
4.1	Differentiation
4.2	Know that the gradient of a function is the gradient of the tangent at that point.
4.3	Differentiation of kxn where n is an integer,
4.4	The equation of a tangent at any point on a curve
4.5	Increasing and decreasing functions When the gradient is positive/negative a function
4.6	Use the notation $\frac{d^2y}{dx^2}$
4.7	Use of differentiation to find maxima and
4.8	Using calculus to find maxima and minima
4.9	Sketch/ interpret a curve with known maximum

5. Matrix Calculations	
5.1	Multiplication of matrices
5.2	The identity matrix 2 × 2 only
5.3	Transformations of the unit square in the x –y plane
5.4	Combination of transformations

6. Geometry	
6.1	Perimeter and area of 2D shapes plus surface area and volume of
6.2	Understand and construct geometrical proofs using formal arguments
6.3	Sine and cosine rules in scalene triangles; plus area of a triangle using Sin
6.4	Use of Pythagoras' theorem in 2D and 3D Recognise Pythagorean triples; 3, 4, 5; 5,12,13;
6.5	Be able to apply trigonometry and Pythagoras' theorem to 2 and 3 dimensional problems
6.6	Sketch and use graphs of y = sin x, y = cos x, and y = tan x
6.7	Be able to use the definitions sin θ, cos θ and tan θ, for any positive angle up to 360
6.8	Knowledge and use of 30°, 45°, 60°, 90° triangles
6.1	Solution of simple trigonometric equations in given intervals

Mrs Maths Llewellyn