



Magna Academy Age Related Expectation - Maths

	End of KS2	Year 7	Year 8	Year 9	Year 10	Year 11
Number and Place Value	I can demonstrate formal written methods for all four operations including long multiplication and division and in working with fractions, decimals and percentages and ratios, and make connections between them. I can solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. I can begin to use the language of algebra as a tool for solving a variety of problems. I can: - Classify shapes with increasingly complex geometric	I can make meaningful connections between different mathematical concepts and apply them readily.	I can demonstrate being increasingly fluent in making meaningful connections between different mathematical concepts and apply them consistently well.	I can confidently calculate using exact roots, integer indices and π .	I can confidently use indices with fractional and negative integers, convert recurring decimals into fractions, interpret and apply bounds.	I can confidently use irrational numbers and composite functions.
Calculation		I can understand and solve some algebraic equations; understanding how to manipulate expressions and equations fluently.	I can understand and solve a variety of algebraic equations; understanding how to manipulate expressions and equations fluently.	I can use algebra to support and construct arguments	I can factorise and expand quadratic and cubic expressions, derive the inverse function, and identify perpendicular lines, sketch nonlinear functions, apply to kinematic situations and find the turning points and roots.	I can draw, transform and recognise non-linear graphs.
Fractions		I can apply formulas and known rules to geometry and measure problems to find information.	I can apply formulas and known rules to geometry and measure problems to find a variety of information.	I can interpret and construct tables, charts and diagrams, including tables and line graphs for time series data and know their appropriate use.	I can solve quadratic equations and inequalities using completing the square and formula.	
Geometry and Measures		I can express one quantity as a fraction of another and compare two quantities using percentages.	I can apply formulas and known rules to geometry and measure problems to find a variety of information.	I can draw estimated lines of best fit, make predictions, interpolate and extrapolate.	I can recognise and differentiate between all sequence types.	
Statistics		I can derive and apply properties of quadrilaterals, including square, rectangle, parallelogram, trapezium, kite and	I can recognise, sketch and interpret graphs of simple quadratic function, distance-time and velocity-time graphs.	I can calculate the probability of independent and dependent combined events, use tree diagrams and other representations.	I can use complex direct and inverse proportion, use iteration to find solutions and find gradients of tangent and normal lines.	
Algebra			I can apply ratio to real contexts and problems	I can calculate the probability of independent and dependent combined events, use tree diagrams and other representations.	I can sketch and use distance, velocity and acceleration graphs.	
Ratio and Proportion				I can apply formulas and known rules to geometry and measure problems to find a variety of information.	I can accurately find the equation of a circle and a tangent at one point. I can solve linear and nonlinear simultaneous equations and calculate the nth term of a quadratic and	I can use complex direct and inverse proportion, use iteration to find solutions and find gradients of tangent and normal lines. I can confidently enlarge shapes using a negative and fractional scale factor.



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	<p>properties and use the vocabulary needed to describe them; and - Read, spell and pronounce mathematical vocabulary correctly.</p>	<p>rhombus, triangles and any congruent shapes. I know and can apply formulae to calculate perimeter, area and volume of a variety of 2D and 3D shapes. I can interpret and analyse the distribution of a data set.</p>	<p>(such as those involving conversion, comparison, scaling, mixing and concentrations). Interpret plans and elevations of 3D shapes. I can identify, describe and construct similar shapes. I can construct possibility spaces for single experiments with equally likely outcomes and use these to calculate theoretical probabilities. I can interpret, analyse and compare the distributions of data sets from discrete, continuous and grouped data.</p>	<p>and known rules to geometry and measure problems to find a variety of information, including Pythagoras' theorem, angle facts, constructions and circle theorems. I can interpret the gradient of a straight line graph as a rate of change. I can solve problems involving direct and inverse proportion. I understand that empirical unbiased samples tend towards theoretical probability distributions, with increasing sample size.</p>	<p>understand geometric sequences. I can use non linear proportional graphs, interpret gradients including growth and decay, use circle theorems and describe the combination of transformations. I can calculate surface area and volume of 3D shapes, use trigonometric ratios (including exact values), 3D pythagoras and confidently use vectors. I can construct conditional probability trees, venn diagrams and two tables. I can construct and understand cumulative frequency graphs and box plots.</p>	<p>I can calculate the volume and surface area of composite solids. I can use the sine, cosine and area of the triangle formula. I can complete vector (for parallel and collinear lines) and circle theorem proof. I can construct and interpret histograms.</p>
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