



# Lymm High School- KS3 Life after levels - Maths Y8

|        |                            | BRONZE  | SILVER   | GOLD  | PLATINUM  |
|--------|----------------------------|---|--|---|---|
|        |                            | D and below= GCSE 1,2,3   | C= GCSE 4  | C/B= GCSE 5,6   | A/A*= GCSE 7,8,9  |
| Year 8 | Number, Ratio & Proportion | Illustrate FDP in diagrams<br>Identify / Simplify Ratio<br>Add, Subtract, Multiply and Divide Integers<br>Round to nearest 10, 100, 1000 etc<br>Round to specified number of decimal places<br>Identify types of number (Squares, Cubes, Primes, Roots etc.)<br>Simplify and find Equivalent Fractions<br>Multiply/Divide by powers of 10<br>Know basic recurring decimals and their fraction equivalent<br>Convert basic fractions to decimals and percentages<br>Calculate Percentages of amounts<br>Basic estimate of calculations | Find HCF and LCM of 2 or more numbers<br>Express an integer greater than 2 as a product of prime factors<br>Compare/order 2 or more fractions<br>Apply 4 operations with fractions<br>Apply 4 operations with decimals<br>Understand the effect of multiplying and dividing by decimal less than 1<br>Convert fractions to percentages and decimals<br>Calculate more difficult percentages of amounts<br>Divide into a ratio<br>Apply Unitary method<br>Plot and read conversion graphs | Find the Reciprocal of a number<br>Use 4 operations with mixed numbers<br>Calculate percentage increase/decrease using multipliers<br>Calculate Percentage change<br>Calculate simple interest<br>Convert currencies<br>Round to a specified number of significant figures<br>Estimate calculations by rounding each number to 1sf<br>Use proportion to compare prices and find the Best buy<br>Convert standard index form to ordinary form and vice-versa | Calculate Compound interest, compound growth and compound decay<br>Reverse percentages (Calculate the original amount if given new amount)<br>Calculate simple inverse proportion<br>Add and subtract using standard index form<br>Multiply and divide using standard index form<br>Convert recurring decimals to fractions (using algebra) |
|        | Algebra                    | Simplify algebraic expressions by collecting like terms<br>Plot coordinates in all 4 quadrants<br>Generate sequence given term to term rule<br>Solve linear (basic)   | Write algebraic expressions<br>Simplifying algebraic expressions by multiplying<br>Expand single brackets<br>Substitute positive integers into formulae and expressions.   | Expand double brackets<br>Expand brackets and simplify expressions<br>Factorise expressions<br>Derive and substitute negative numbers and fractions into formulae and expressions   | Factorise quadratic expressions<br>Change subject of a formula (including powers)<br>Use Trial and improvement to find  |



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|  |  | Recognise special sequences (Squares, Cubes, Fibonacci, Triangular numbers etc.) | Find and use nth term of a linear sequence.<br>Plot vertical / horizontal / $y=x$ , $y=-x$ lines<br>Identify expression/equation/formula/identity etc. | Solve linear equations with unknown on both sides<br>Change subject of a formula in basic cases<br>Solve linear equations with fractional and negative solutions<br>Apply Index Laws<br>Plot Straight line graphs using table of values<br>Understand $y=mx+c$<br>Find gradient of parallel lines<br>Calculate midpoint between 2 points<br>Recognise and plot simple quadratic graphs<br>Use nth term of a quadratic sequence<br>Solve basic simultaneous equations by elimination | estimates of solutions of non-linear equations.<br>Solve linear inequalities and represent inequalities on a number line<br>Apply index laws using simple fractional / negative powers<br>Calculate gradient of line segment<br>Calculate the equation of a line given gradient and a point<br>Plot inequalities in the x-y plane and use to find regions<br>Use cover up method to plot implicit graphs<br>Use Trigonometry to find angles in right-angled triangles.<br>Use Trigonometry to find sides in right-angled triangles.<br>Find nth term of a quadratic sequence<br>Recognise and plot more difficult quad graphs<br>Estimate solutions from quadratic graphs<br>Plot cubic and reciprocal graphs<br>Solve quadratic equations by factorising |
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|  |  |   |  |   | <p>Solve harder simultaneous equations by elimination</p> <p>Set up and solve simultaneous equations</p> <p>Solve simultaneous equations graphically</p>  |
|  | <p><b>Probability &amp; Statistics</b></p> | <p>Draw / Read bar charts and pictograms</p> <p>Know and use the probability scale</p> <p>Calculate 3 averages and range from discrete data</p> <p>Calculate probabilities of single events</p> <p>Understand types and sources of data</p> | <p>Know that the probabilities of mutually exclusive events add up to 1.</p> <p>Use lists and sample space diagrams to find all outcomes and calculate probabilities.</p> <p>Design, complete and use two way tables</p> <p>Plot and read scatter graphs</p> | <p>Calculate 3 averages and range from a frequency table</p> <p>Choose appropriate average</p> <p>Calculate Relative frequency from experimental data</p> <p>Calculate Expected frequencies</p> <p>Draw / Read Pie charts</p> <p>Draw/Read Frequency polygons</p> <p>Identify type and strength of Correlation</p> <p>Draw and apply lines of best fit</p> <p>Read and draw box plots</p> | <p>Find Lower Quartile/Upper Quartile/Interquartile Range from discrete data</p> <p>Apply AND/OR rules in probability</p> <p>Draw and use tree diagrams to calculate probability of 2 or more consecutive events</p> <p>Plot and read cumulative frequency graphs</p> <p>Draw a cumulative frequency graph</p> <p>Find Median, Lower Quartile, Upper Quartile and Interquartile Range from a Cumulative Frequency graph</p> <p>Estimate mean and class that median lies in from a grouped frequency table.</p> <p>Find modal class from a grouped frequency table</p> |



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|  | <p><b>Geometry &amp; Measures</b></p> | <p>Know and apply Angle properties (Angles on a line, at a point, Angles in a triangle, Angles in a quadrilateral etc))<br/>         Identify types and properties of triangles, quadrilaterals and other shapes.<br/>         Identify Faces, Edges, Vertices of 3D shapes<br/>         Draw and identify nets of 3D shapes<br/>         Identify reflective symmetry<br/>         Identify rotational symmetry<br/>         Draw Basic reflections<br/>         Draw Positive Enlargement with positive scale factor without a centre of enlargement<br/>         Use a ruler, protractor and compass correctly<br/>         Know the different types of angles.</p> | <p>Convert metric units<br/>         Convert metric to imperial units<br/>         Calculate perimeter and area of Rectangles, Triangles and Parallelograms<br/>         Calculate area of compound shapes<br/>         Calculate Surface Area of cubes and cuboids<br/>         Isometric drawings<br/>         Plans and elevations<br/>         Calculate Volume of Cubes and Cuboids<br/>         Plot and read distance time graphs<br/>         Draw and describe Reflections in horizontal/vertical lines and lines <math>y=x</math>, <math>y=-x</math> in the x-y plane<br/>         Draw and describe Rotation in x-y plane<br/>         Draw and describe Translations<br/>         Construct SAS, ASA, SSS triangles.</p> | <p>Calculate Angles in parallel lines<br/>         Find Exterior and Interior angles in polygons<br/>         Understand and use bearings<br/>         Convert units of capacity / area / volume<br/>         Calculate the area of a Trapezium<br/>         Calculate the Perimeter and area of Circles<br/>         Calculate Surface Area of Triangular Prisms<br/>         Calculate the Volume of Prisms inc. Cylinders<br/>         Calculate Volume of Composite Prisms<br/>         Calculate Speed/Distance/Time<br/>         Draw and describe an Enlargement of a shape with a Positive sf about a point<br/>         Construct a Perpendicular Bisector including from a point<br/>         Construct an Angle bisector<br/>         Construct Loci<br/>         Apply Pythagoras' Theorem to find hypotenuse<br/>         Apply Pythagoras' Theorem to find a shorter side</p> | <p>Calculate Perimeter and area of circles in terms of pi<br/>         Perimeter &amp; Area of compound shapes made up of parts of circles<br/>         Use similar shapes to find missing lengths<br/>         Calculate density / acceleration / pressure<br/>         Describe and perform multiple transformations<br/>         Draw and describe enlargements with negative scale factors<br/>         Describe regions with combination of loci<br/>         Calculate Surface Area of Cylinder<br/>         Construct Special Angles (<math>30^\circ</math>, <math>45^\circ</math>, <math>60^\circ</math>)</p> |
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