

Time	Topic	What students should know	Mathswatch links for revision
1	1.1 Number problems and reasoning	<ul style="list-style-type: none"> • Work out the total number of ways of performing a series of tasks. 	
2	1.2 Place value and estimating	<ul style="list-style-type: none"> • Estimate an answer. • Use place value to answer questions. 	<ul style="list-style-type: none"> • 92 - Using Place Value • 91 - Estimating Answers
2	1.3 HCF and LCM	<ul style="list-style-type: none"> • Write a number of the product of its prime factors. • Find the HCF and LCM of two numbers. 	<ul style="list-style-type: none"> • 78 - Product Of Primes • 79 - Highest Common Factor (HCF) • 80 - Lowest Common Multiple (LCM)
2	1.4 Calculating with powers (indices)	<ul style="list-style-type: none"> • Use powers and roots in calculations. • Multiply and divide using index laws. • Work out a power raised to a power. 	<ul style="list-style-type: none"> • 131 - Index Notation • 82 - Working With Indices
2	1.5 Zero, negative and fractional indices	<ul style="list-style-type: none"> • Use negative indices. • Use fractional indices. 	<ul style="list-style-type: none"> • 154 - Negative Indices • 188 - Fractional Indices

2	1.6 Powers of 10 and standard form	<ul style="list-style-type: none"> • Write a number in standard form. • Calculate with numbers in standard form. 	<ul style="list-style-type: none"> • 83 - Standard Form
2	1.7 Surds	<ul style="list-style-type: none"> • Understand the difference between rational and irrational numbers. • Simplify a surd. • Rationalise a denominator. 	<ul style="list-style-type: none"> • 207 - Surds
1	2.1 Algebraic indices	<ul style="list-style-type: none"> • Use the rules of indices to simplify algebraic expressions. 	<ul style="list-style-type: none"> • 131 - Index Notation • 82 - Working With Indices • 154 - Negative Indices • 188 - Fractional Indices
2	2.2 Expanding and factorising	<ul style="list-style-type: none"> • Expand brackets. • Factorise algebraic expressions. 	<ul style="list-style-type: none"> • 93 - Expanding Brackets • 134 - Expanding & Simplifying Brackets • 94 - Simple Factorisation

3	2.3 Equations	<ul style="list-style-type: none"> • Solve equations involving brackets and numerical fractions. • Use equations to solve problems. 	<ul style="list-style-type: none"> • 93 - Expanding Brackets • 134 - Expanding & Simplifying Brackets • 135 - Solving Equations
2	2.4 Formulae	<ul style="list-style-type: none"> • Substitute numbers into formulae. • Rearrange formulae. • Distinguish between expressions, equations, formulae and identities. 	<ul style="list-style-type: none"> • 95 - Substitution • 136 - Rearranging Simple Formulae • 190 - Rearranging Difficult Formulae
2	2.5 Linear sequences	<ul style="list-style-type: none"> • Find a general formula for the nth term of an arithmetic sequence. • Determine whether a particular number is a term of a given arithmetic sequence. 	<ul style="list-style-type: none"> • 103 - Nth term

2	2.6 Non-linear sequences	<ul style="list-style-type: none"> • Solve problems using geometric sequences. • Work out terms in Fibonacci-like sequences. • Find the nth term of a quadratic sequence. 	<ul style="list-style-type: none"> • 213 - Finding The Nth Term Of A Quadratic • 104 - Special Sequences • 141 - Fibonacci Sequences
2	2.7 More expanding and factorising	<ul style="list-style-type: none"> • Expand the product of two brackets. • Use the difference of two squares. • Factorise quadratics of the form $x^2 + bx + c$. 	<ul style="list-style-type: none"> • 158 - Difference Of Two Squares • 134 - Expanding & Simplifying Brackets • 157 - Factorising & Solving Quadratics

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2	3.1 Statistical diagrams 1	<ul style="list-style-type: none"> • Construct and use back-to-back stem and leaf diagrams. • Construct and use frequency polygons and pie charts. 	<ul style="list-style-type: none"> • 128 - Pie Charts
1	3.2 Time series	<ul style="list-style-type: none"> • Plot and interpret time series graphs. • Use trends to predict what might happen in the future. 	<ul style="list-style-type: none"> • 153 - Time Series
1	3.3 Scatter graphs	<ul style="list-style-type: none"> • Plot and interpret scatter graphs. • Determine whether or not there is a linear relationship between two variables. 	<ul style="list-style-type: none"> • 129 - Scatter Diagrams
1	3.4 Line of best fit	<ul style="list-style-type: none"> • Draw a line of best fit on a scatter graph. • Use the line of best fit to predict values. 	<ul style="list-style-type: none"> • 129 - Scatter Diagrams

1	3.5 Averages and range	<ul style="list-style-type: none"> Decide which average is best for a set of data. Estimate the mean and range from a grouped frequency table. Find the modal class and the group containing the median. 	<ul style="list-style-type: none"> 62 - Averages & The Range 130 - Averages From A Table
3	3.6 Statistical diagrams 2	<ul style="list-style-type: none"> Construct and use two-way tables. Choose appropriate diagrams to display data. Recognise misleading graphs. 	<ul style="list-style-type: none"> 61 - Two Way Tables
4	4.1 Fractions	<ul style="list-style-type: none"> Add, subtract, multiply and divide fractions and mixed numbers. Find the reciprocal of an integer, decimal or fraction. 	<ul style="list-style-type: none"> 71 - Adding & Subtracting Fractions 73 - Multiplying Fractions 74 - Dividing Fractions 76 - Reciprocals
2	4.2 Ratios	<ul style="list-style-type: none"> Write ratios in the form 1 : n or n : 1. Compare ratios. Find quantities using ratios. Solve problems involving ratios. 	<ul style="list-style-type: none"> 38 - Introduction To Ratio 106 - Sharing Using Ratios 107 - Ratios, Fractions & Graphs
2	4.3 Ratio and proportion	<ul style="list-style-type: none"> Convert between currencies and measures. Recognise and use direct proportion. Solve problems involving ratios and proportion. 	<ul style="list-style-type: none"> 199 - Direct & Inverse Proportion
3	4.4 Percentages	<ul style="list-style-type: none"> Work out percentage increases and decreases. Solve real-life problems involving percentages. 	<ul style="list-style-type: none"> 86 - Percentage Of An Amount (Calc) 87 - Percentage Of An Amount (Non Calc) 108 - Increase/Decrease By A Percentage

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2	4.5 Fractions, decimals and percentages	<ul style="list-style-type: none"> Calculate using fractions, decimals and percentages. Convert a recurring decimal to a fraction. 	<ul style="list-style-type: none"> 85 - Fractions, Percentages, Decimals 177 - Recurring Decimals To Fractions
3	5.1 Angle properties of triangles and quadrilaterals	<ul style="list-style-type: none"> Derive and use the sum of angles in a triangle and in a quadrilateral. Derive and use the fact that the exterior angle of a triangle is equal to the sum of the two opposite interior angles. 	<ul style="list-style-type: none"> 45 - Angles On A Line & At A Point 121 - Angles In A Triangle 123 - Angle Sum Of Polygons

2	5.2 Interior angles of a polygon	<ul style="list-style-type: none"> • Calculate the sum of the interior angles of a polygon. • Use the interior angles of polygons to solve problems. 	<ul style="list-style-type: none"> • 45 - Angles On A Line & At A Point • 121 - Angles In A Triangle • 123 - Angle Sum Of Polygons
2	5.3 Exterior angles of a polygon	<ul style="list-style-type: none"> • Know the sum of the exterior angles of a polygon. • Use the angles of polygons to solve problems. 	<ul style="list-style-type: none"> • 45 - Angles On A Line & At A Point • 121 - Angles In A Triangle • 123 - Angle Sum Of Polygons
2	5.4 Pythagoras' theorem 1	<ul style="list-style-type: none"> • Calculate the length of the hypotenuse in a right-angled triangle. • Solve problems using Pythagoras' theorem. 	<ul style="list-style-type: none"> • 150 - Pythagoras Theorem
3	5.5 Pythagoras' theorem 2	<ul style="list-style-type: none"> • Calculate the length of a shorter side in a right-angled triangle. • Solve problems using Pythagoras' theorem. 	<ul style="list-style-type: none"> • 150 - Pythagoras Theorem
4	5.6 Trigonometry 1	<ul style="list-style-type: none"> • Use trigonometric ratios to find lengths in a right-angled triangle. • Use trigonometric ratios to solve problems. 	<ul style="list-style-type: none"> • 168 - Trigonometry • 173 - Exact Trigonometric Values
4	5.7 Trigonometry 2	<ul style="list-style-type: none"> • Use trigonometric ratios to calculate an angle in a right-angled triangle. • Find angles of elevation and angles of depression. • Use trigonometric ratios to solve problems. • Know the exact values of the sine, cosine and tangent of some angles. 	<ul style="list-style-type: none"> • 168 - Trigonometry • 173 - Exact Trigonometric Values

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3	6.1 Linear graphs	<ul style="list-style-type: none"> • Find the gradient and y-intercept from a linear equation. • Rearrange an equation into the form $y = mx + c$. • Compare two graphs from their equations. • Plot graphs with equations $ax + by = c$. 	<ul style="list-style-type: none"> • 96 - Straight Line Graphs • 97 - Gradient Of A Line • 159 - Equation Of A Straight Line • 136 - Rearranging Simple Formulae
2	6.2 More linear graphs	<ul style="list-style-type: none"> • Sketch graphs using the gradient and intercepts. • Find the equation of a line, given its gradient and one point on the line. • Find the gradient of a line through two points. 	<ul style="list-style-type: none"> • 96 - Straight Line Graphs • 97 - Gradient Of A Line • 159 - Equation Of A Straight Line • 136 - Rearranging Simple Formulae

2	6.3 Graphing rates of change	<ul style="list-style-type: none"> • Draw and interpret distance–time graphs. • Calculate average speed from a distance–time graph. • Understand velocity–time graphs. • Find acceleration and distance from velocity–time graphs. 	<ul style="list-style-type: none"> • 143 - Distance Time Graphs • 216 - Velocity Time Graphs
2	6.4 Real-life graphs	<ul style="list-style-type: none"> • Draw and interpret real-life linear graphs. • Recognise direct proportion. • Draw and use a line of best fit. 	<ul style="list-style-type: none"> • 143 - Distance Time Graphs • 216 - Velocity Time Graphs • 199 - Direct & Inverse Proportion • 129 - Scatter Diagrams
2	6.5 Line segments	<ul style="list-style-type: none"> • Find the coordinates of the midpoint of a line segment. • Find the gradient and length of a line segment. • Find the equations of lines parallel or perpendicular to a given line. 	<ul style="list-style-type: none"> • 27 - Half Way Values • 96 - Straight Line Graphs • 97 - Gradient Of A Line • 159 - Equation Of A Straight Line
2	6.6 Quadratic graphs	<ul style="list-style-type: none"> • Draw quadratic graphs. • Solve quadratic equations using graphs. • Identify the line of symmetry of a quadratic graph. • Interpret quadratic graphs relating to real-life situations. 	<ul style="list-style-type: none"> • 98 - Drawing Quadratic Graphs • 157 - Factorising & Solving Quadratics • 160 - Roots & Turning Points Of Quadratics
2	6.7 Cubic and reciprocal graphs	<ul style="list-style-type: none"> • Draw graphs of cubic functions. • Solve cubic equations using graphs. • Draw graphs of reciprocal functions. • Recognise a graph from its shape. 	<ul style="list-style-type: none"> • 161 - Cubic & Reciprocal Graphs
2	6.8 More graphs	<ul style="list-style-type: none"> • Interpret linear and non-linear real-life graphs. • Draw the graph of a circle. 	<ul style="list-style-type: none"> • 96 - Straight Line Graphs • 97 - Gradient Of A Line • 159 - Equation Of A Straight Line • 98 - Drawing Quadratic Graphs • 157 - Factorising & Solving Quadratics • 160 - Roots & Turning Points Of Quadratics • 197 - Equation Of A Circle
4	7.1 Perimeter and area	<ul style="list-style-type: none"> • Find the perimeter and area of compound shapes. • Recall and use the formula for the area of a trapezium. 	<ul style="list-style-type: none"> • 52 - Perimeter • 53 - Area Of A Rectangle • 54 - Area Of A Triangle • 55 - Area Of A Parallelogram • 56 - Area Of A Trapezium

2	7.2 Units and accuracy	<ul style="list-style-type: none"> • Convert between metric units of area. • Calculate the maximum and minimum possible values of a measurement. 	<ul style="list-style-type: none"> • 142 - Compound Units • 206 - Upper & Lower Bounds
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2	7.3 Prisms	<ul style="list-style-type: none"> • Convert between metric units of volume. • Calculate volumes and surface areas of prisms. 	<ul style="list-style-type: none"> • 142 - Compound Units • 114 - Surface Area Of A Prism • 115 - Volume Of A Cuboid • 119 - Volume Of A Prism
2	7.4 Circles	<ul style="list-style-type: none"> • Calculate the area and circumference of a circle. • Calculate area and circumference in terms of π. 	<ul style="list-style-type: none"> • 116 - Circle Definitions • 117 - Area Of A Circle • 118 - Circumference Of A Circle
3	7.5 Sectors of circles	<ul style="list-style-type: none"> • Calculate the perimeter and area of semicircles and quarter circles. • Calculate arc lengths, angles and areas of sectors of circles. 	<ul style="list-style-type: none"> • 116 - Circle Definitions • 117 - Area Of A Circle • 149 - Tangents, Arcs, Sectors & Segments • 118 - Circumference Of A Circle
4	7.6 Cylinders and spheres	<ul style="list-style-type: none"> • Calculate volume and surface area of a cylinder and a sphere. • Solve problems involving volumes and surface areas. 	<ul style="list-style-type: none"> • 114 - Surface Area Of A Prism • 115 - Volume Of A Cuboid • 119 - Volume Of A Prism • 169 - Spheres
4	7.7 Pyramids and cones	<ul style="list-style-type: none"> • Calculate volume and surface area of pyramids and cones. • Solve problems involving pyramids and cones. 	<ul style="list-style-type: none"> • 170 - Pyramids • 171 - Cones
1	8.1 3D solids	<ul style="list-style-type: none"> • Draw plans and elevations of 3D solids. 	<ul style="list-style-type: none"> • 51 - Plans & Elevations
2	8.2 Reflection and rotation	<ul style="list-style-type: none"> • Reflect a 2D shape in a mirror line. • Rotate a 2D shape about a centre of rotation. • Describe reflections and rotations. 	<ul style="list-style-type: none"> • 48 - Reflections • 49 - Rotations
1	8.3 Enlargement	<ul style="list-style-type: none"> • Enlarge shapes by fractional and negative scale factors about a centre of enlargement. 	<ul style="list-style-type: none"> • 148 - Enlargements • 181 - Enlargements Negative Scale Factors
1	8.4 Transformations and combinations of transformations	<ul style="list-style-type: none"> • Translate a shape using a vector. • Carry out and describe combinations of transformations. 	<ul style="list-style-type: none"> • 50 - Translations • 182 - Combinations Of Transformations

3	8.5 Bearings and scale drawings	<ul style="list-style-type: none"> ● Draw and use scales on maps and scale drawings. ● Solve problems involving bearings. 	<ul style="list-style-type: none"> ● 124 - Bearings
2	8.6 Constructions 1	<ul style="list-style-type: none"> ● Construct triangles using a ruler and compasses. ● Construct the perpendicular bisector of a line. ● Construct the shortest distance from a point to a line using a ruler and compasses. 	<ul style="list-style-type: none"> ● 147 - Drawing Triangles Using Compasses ● 145 - Bisecting An Angle ● 146 - Constructing Perpendiculars

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2	8.7 Constructions 2	<ul style="list-style-type: none"> ● Bisect an angle using a ruler and compasses. ● Construct angles using a ruler and compasses. ● Construct shapes made from triangles using a ruler and compasses. 	<ul style="list-style-type: none"> ● 147 - Drawing Triangles Using Compasses ● 145 - Bisecting An Angle ● 146 - Constructing Perpendiculars
1	8.8 Loci	<ul style="list-style-type: none"> ● Draw a locus. ● Use loci to solve problems. 	<ul style="list-style-type: none"> ● 165 - Loci