KS3 Maths –Mapping Overview

▲ Triangle Pathway

ACET EMPOWERING ACHIEVEMENT
SHIREBROOK ACADEMY
STRIVING FOR EXCELLENCE

N1
Y7 - Understand place value. Round to nearest whole, 10, 100 & 1000.
Y8 - Calculate with integers. Round to nearest whole, 10, 100 & 1000.
Y9 - Perform calculations with integers & decimals, with and without a calculator. Begin to round to significant figures.

N2
Y7 - Identify odd, even and prime numbers. Recognise simple powers of 2, 5 and 10.
Y8 - Identify types of number including prime numbers. Recognise simple powers.
Y9 - Find HCF & LCM by listing. Write a number as a product of its prime factors. Calculate powers and roots.

GM1
Y7 - Classify triangles based on their properties. Identify types of angles
Y8 - Classify triangles and quadrilaterals using their properties. Know basic angle facts.
Y9 - Classify 2D shapes from their properties. Calculate interior and exterior angles of regular polygons.

A1
Y7 - Simplify simple expressions by collecting like terms.
Y8 - Collect like terms to simplify expressions. Substitute positive numbers into algebraic expressions.
Y9 - Work with algebraic expressions including those with a single bracket. Substitute into expressions with powers.

N3
Y7 - Simplify fractions. Find basic fractions of an amount.
Y8 - Order fractions. Add, subtract and multiply fractions.
Y9 - Convert between mixed numbers & improper fractions. Add, subtract, multiply & divide fractions.

S2
Y7 - Plot points on a scatter diagram, when axes are provided.
Y8 - Plot scatter diagrams and identify any correlation.
Y9 - Plot and interpret scatter diagrams and draw a line of best fit. Recognise correlation.

S1
Y7 - Calculate the mode, median and range for a data set. Record information in a tally chart.
Y8 - Find the mean, median, mode and range for a set of data. Collect and represent data using charts and diagrams.
Y9 - Compare simple data sets using averages. Represent data using a variety of charts and diagrams.

GM2
Y7 - Calculate perimeter & area of rectangles.
Y8 - Calculate perimeter & area of rectangles, triangles & parallelograms.
Y9 - Calculate perimeter & area of 2D shapes including circles and composite shapes.

N4
Y7 - Calculate the percentage of an amount using a calculator. Begin to use ratio notation.
Y8 - Calculate the percentages of quantities. Split a quantity into a ratio.
Y9 - Calculate percentage increase & decrease of quantities using a calculator. Divide quantities into given ratios.

A2
Y7 - Understand and use function machines.
Y8 - Solve one and two step linear equations. Use <,≤ , ≥, > symbols appropriately.
Y9 - Solve one and two step linear equations, including those with brackets. Solve simple inequalities.

GM3
Y7 - Recognise and know the properties of the cube and cuboid. Calculate the volume of cuboids.
Y8 - Recognise properties of simple 3D shapes. Calculate surface area and volume of cubes & cuboids.
Y9 - Interpret plans & elevations. Solve problems involving volume and surface area of cubes, cuboids & triangular prisms.

A3
Y7 - Generate a sequence by spotting a pattern or using a term-to-term rule given in words. Plot and read co-ordinates.
Y8 - Generate a sequence by spotting a pattern or using a term-to-term rule. Name & plot graphs of horizontal & vertical lines.
Y9 - Understand the nth term of a sequence. Plot graphs of simple straight line functions. Identify the gradient and intercept of straight line graphs.

GM4
Y7 - Translate, Rotate and Reflect simple shapes.
Y8 - Translate, reflect and rotate objects. Enlarge a shape with a positive whole number scale factor.
Y9 - Perform transformations; translations, rotations using a centre of rotation, reflections in a given line. Enlarge a shape given a centre of enlargement.

S3
Y7 - An introduction to the probability scale and language of probability. List outcomes e.g. Menu choices
Y8 - Use the probability scale and language of probability. List outcomes of events.
Y9 - Calculate the probability of events happening. Record outcomes of an experiment and calculate relative frequency.

GM5
Y7 - Begin to use a ruler & protractor to measure accurately. Practise using a compass.
Y8 - Use metric units of measurement for length, mass, time and money.
Y9 - State the bearings of compass directions. Use map scales and other scales to create accurate plans.

KS3 Maths –Mapping Overview

Square Pathway

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N1
Y7 - Understand place value and calculate with integers. Round to nearest whole, 10, 100 & 1000.
Y8 - Calculate with integers & decimals. Round to decimal places.
Y9 - Perform complex calculations with negatives & decimals. Round to appropriate levels of accuracy.

N2
Y7 - Identify types of number. Recognise simple powers.
Y8 - Know types of number. Find HCF & LCM. Calculate powers and roots.
Y9 - Express a number as a product of its prime factors using power notation. Convert large & small numbers to and from standard form.

GM1
Y7 - Identify properties of simple 2D shapes. Know basic angle facts.
Y8 - Know properties of polygons. Find interior and exterior angles of polygons.
Y9 - Use geometrical reasoning with properties of polygons. Identify congruent triangles. Find angles on parallel lines.

A1
Y7 - Simplify expressions. Substitute with positive numbers.
Y8 - Form and simplify expressions including expanding brackets & factorising. Substitute into expressions with powers.
Y9 - Recognise a quadratic expression. Factorise and expand expressions. Formulate simple formulae and expressions from real-world contexts. Change the subject of a given formula.

N3
Y7 - Simplify and find equivalent fractions. Find a fractions of an amount.
Y8 - Convert between improper fractions & mixed numbers. Add, subtract, multiply & divide fractions.
Y9 - Add, subtract, multiply & divide mixed numbers. Convert between FDP.

S2
Y7 - Plot scatter diagrams.
Y8 - Plot scatter diagrams and draw a line of best fit. Recognise correlation.
Y9 - Plot & interpret scatter diagrams. Use correlation to describe data & identify outliers.

S1
Y7 - Find the mean, median, mode and range for a set of data. Represent data through the use of tally charts & bar charts.
Y8 - Make comparisons about data using averages & range. Represent data through the use of pictograms, dual bar charts & line charts.
Y9 - Find the mean, mode and range from a frequency table. Recognise how graphs can be misleading.

GM2
Y7 - Calculate perimeter & area of rectangles & triangles.
Y8 - Calculate perimeter & area of 2D shapes including circles.
Y9 - Solve problems involving perimeter & area of 2D shapes, including circles & composite shapes. Use Pythagoras' Theorem to find missing sides in triangles.

N4
Y7 - Calculate the percentages of quantities. Simplify and find equivalent ratios.
Y8 - Calculate percentage increase & decrease of quantities. Divide quantities into given ratios. Use the unitary method to solve problems.
Y9 - Calculate percentage change between two amounts. Use percentage multipliers for calculations. Solve ratio problems.

A2
Y7 - Solve simple linear equations.
Y8 - Solve linear equations, including those with brackets. Solve simple inequalities.
Y9 - Solve linear equations and inequalities, including those with unknowns on both sides. Represent inequalities on a number line.

GM3
Y7 - Identify properties of simple 3D shapes. Calculate volume and surface area of cubes & cuboids.
Y8 - Know properties of 3D shapes. Interpret plans & elevations. Calculate volume and surface area of cubes, cuboids & triangular prisms.
Y9 - Construct plans & elevations. Calculate volume and surface area of cylinders. Find missing lengths when given volume.

A3
Y7 - Find missing terms in sequences from identifying the term-to-term rule. Identify & plot graphs of horizontal & vertical lines.
Y8 - Find the nth term of a linear sequence. Generate a sequence given the nth term. Plot graphs of straight line equations. Identify the gradient and intercept of straight line graphs.
Y9 - Find the nth term of an arithmetic sequence. Use the form y=mx+c to plot straight line graphs. Recognise & plot quadratic graphs.

GM4
Y7 - Perform simple transformations.
Y8 - Perform translations. Perform rotations using a centre of rotation. Reflect an object in a given line. Enlarge a shape given a centre of enlargement.
Y9 - Perform and begin to describe transformations. Identify scale factors in similar shapes and find missing lengths.

S3
Y7 - Understand and use the probability scale. List outcomes of events.
Y8 - Find the probability of events happening. Use tables & grids to list outcomes of events.
Y9 - Use relative frequency as an estimate of probability. Use sample space diagrams to record and calculate probabilities of combined events.

GM5
Y7 - Use a ruler, compass & protractor accurately.
Y8 - Use & convert standard units of measurement for length, mass, time and money.
Y9 - Construct and interpret scale drawings. Measure and draw bearings using a protractor.

KS3 Maths –Mapping Overview

Pentagon Pathway

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N1
Y7 - Calculate with integers & decimals. Round to decimal places.
Y8 - Perform complex calculations with negatives & decimals. Round to significant figures.
Y9 - Estimate, without a calculator, complex calculations including powers and decimals.

N2
Y7 - Know types of number. Find HCF & LCM. Calculate powers and roots.
Y8 - Use prime factors to find HCF & LCM. Calculate more complex powers & roots. Convert large & small numbers to and from standard form..
Y9 - Use prime factors to find HCF & LCM and express answers using correct power notation. Know and apply the laws of indices. Multiply & divide with numbers in standard form.

GM1
Y7 - Identify types of quadrilaterals and know properties of polygons. Find missing angles.
Y8 - Use geometrical reasoning with properties of polygons. Find angles on parallel lines.
Y9 - Give geometrical reasons to justify the properties of triangles and quadrilaterals. Begin to understand the formal proofs of congruent triangles. Know and use angles facts on parallel lines.

A1
Y7 - Form and simplify expressions including expanding brackets. Substitute into expressions with powers.
Y8 - Factorise and expand expressions. Substitute with positive & negative numbers. Change the subject of a given formula.
Y9 - Expand double brackets and factorise expressions. Change the subject of a given formula that include powers or fractions.

N3
Y7 - Convert between improper fractions & mixed numbers. Add, subtract & multiply fractions.
Y8 - Add, subtract, multiply & divide mixed numbers. Convert between FDP.
Y9 - Solve worded problems that rely on the use of calculating with mixed numbers. Convert a recurring decimal to an exact fraction.

S2
Y7 - Plot scatter diagrams and draw a line of best fit.
Y8 - Plot & interpret scatter diagrams. Use correlation to describe data.
Y9 - Plot & interpret scatter diagrams. Identify outliers & the relationship between represented data.

S1
Y7 - Compare data using the mean, median, mode and range. Represent data through the use of pictograms & dual bar charts.
Y8 - Find the mean, mode and range from a frequency table. Represent data through the use of dual bar charts, pie charts and stem & leaf diagrams.
Y9 - Find the modal class and calculate estimates of mean, median & range from a frequency table. Represent data through the use of pie charts, stem & leaf diagrams and frequency polygons.

GM2
Y7 - Calculate perimeter & area of parallelograms & trapeziums.
Y8 - Solve problems involving perimeter & area of 2D shapes. Use Pythagoras' Theorem to find missing sides in triangles.
Y9 - Solve problems involving perimeter & area of 2D shapes, including composite shapes & those expressed algebraically. Find arc length and sector area. Use & apply Pythagoras' Theorem.

N4
Y7 - Calculate percentage increase & decrease of quantities. Divide quantities into given ratios.
Y8 - Calculate percentage change between two amounts. Begin to use percentage multipliers. Solve ratio problems.
Y9 - Solve percentage problems in context including the use of multipliers. Solve ratio problems. Solve formal problems involving direct proportion.

A2
Y7 - Solve linear equations, including those with brackets.
Y8 - Solve linear equations and inequalities, including those with unknowns on both sides. Represent inequalities on a number line.
Y9 - Set up and solve linear equations for perimeter & angle problems. Solve inequalities and represent solutions on a number line. Solve simultaneous equations algebraically and graphically.

GM3
Y7 - Identify properties of 3D shapes. Calculate volume and surface area of cubes, cuboids & triangular prisms.
Y8 - Classify 3D shapes from their properties. Construct plans & elevations. Calculate volume and surface area of cylinders.
Y9 - Find the missing height or radius of a cylinder given the volume. Find the volume & surface area of pyramids, cones & spheres.

A3
Y7 - Generate a sequence given the term-to-term rule. Identify & plot graphs of simple straight line equations.
Y8 - Find the nth term of a linear sequence. Use the form y=mx+c to plot straight line graphs.
Y9 - Generate a quadratic sequence from the nth term. Use the form y=mx+c to plot straight line graphs and state gradients. Calculate the gradient of a line segment. Recognise & plot quadratic graphs.

GM4
Y7 - Perform transformations.
Y8 - Use vector notation to perform and describe translations. Identify the centre of a rotation and an enlargement.
Y9 - Perform & describe a sequence of transformations. Understand and use scalar multiplication of vectors.

S3
Y7 - Find the probability of events happening. Use tables & grids to list outcomes of events.
Y8 - Use relative frequency as an estimate of probability. Use sample space diagrams to record combinations of events.
Y9 - Use relative frequency as an estimate of probability. Use tree diagrams to record probabilities of successive events.

GM5
Y7 - Use a compass & protractor to construct triangles.
Y8 - Know and apply the speed, distance, time formula.
Y9 - Calculate bearings on diagrams using angle facts. Draw diagrams to scale using bearings.

KS3 Maths –Mapping Overview

Heptagon Pathway

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N1
Y7 - Perform complex calculations with negatives & decimals. Round to significant figures.
Y8 - Find upper and lower bounds of previously rounded numbers.
Y9 - Apply and interpret limits of accuracy to solve problems.

N2
Y7 - Use prime factors to find HCF & LCM. Calculate more complex powers & roots.
Y8 - Use prime factors to find HCF & LCM and express answers using correct power notation. Know and apply the laws of indices. Multiply & divide with numbers in standard form.
Y9 - Know and apply the laws of indices with coefficients. Use surd notation to represent irrational numbers.

GM1
Y7 - Know and use properties of polygons. Find angles on parallel lines.
Y8 - Find interior and exterior angles of regular & irregular polygons. Know and use angles facts on parallel lines.
Y9 - Use the formal proofs to prove two triangles are congruent. Introduction to circle theorems.

A1
Y7 - Factorise and expand expressions. Substitute with positive & negative numbers.
Y8 - Factorise and expand simple quadratics. Change the subject of a given formula that include powers or fractions.
Y9 - Factorise, expand and solve quadratics. Change the subject of a given formula where the subject appears twice.

N3
Y7 - Add, subtract, multiply & divide mixed numbers. Convert between FDP.
Y8 - Solve worded problems that rely on the use of calculating with mixed numbers. Order and compare mixed numbers.
Y9 - Solve worded problems that rely on the use of calculating with mixed numbers. Convert between recurring decimals and fractions.

S2
Y7 - Plot & interpret scatter diagrams.
Y8 - Plot & interpret scatter diagrams. Interpret correlation & identify outliers.
Y9 - Plot & interpret scatter diagrams. Use a line of best fit to make predictions where appropriate.

S1
Y7 - Find the mean, mode and range from a frequency table. Represent data through the use of dual bar charts & pie charts.
Y8 - Find the mean, mode and range from a grouped frequency table. Represent data through the use of pie charts, stem & leaf diagrams and frequency polygons.
Y9 - Construct and interpret box plots & cumulative frequency graphs. Compare data sets using averages.

GM2
Y7 - Calculate perimeter & area of 2D shapes including circles.
Y8 - Solve problems involving perimeter & area of 2D shapes, including those expressed algebraically. Use & apply Pythagoras' Theorem.
Y9 - Find arc length and sector area. Use & apply Pythagoras' Theorem in 2D & 3D. An introduction to Trigonometry.

N4
Y7 - Calculate percentage change between two amounts. Solve ratio problems.
Y8 - Use multipliers to calculate percentage change. Calculate interests in financial contexts. Solve ratio problems. Solve formal problems involving direct proportion.
Y9 - Calculate reverse percentages using both non-calculator and calculator methods. Solve ratio problems. Solve formal problems involving direct & inverse proportion.

A2
Y7 - Solve linear equations, including those with unknowns on both sides.
Y8 - Solve linear equations and inequalities, including those with unknowns on both sides. Represent inequalities on a number line. Solve simultaneous equations.
Y9 - Set up and solve linear equations for perimeter & angle problems. Represent linear inequalities on a graph and shade regions. Solve simultaneous equations algebraically and graphically.

GM3
Y7 - Classify 3D shapes from their properties. Find missing lengths given the volume of cubes & cuboids.
Y8 - Represent solids from plans and elevations, using isometric paper. Find the missing height or radius of a cylinder given the volume.
Y9 - Find the volume & surface area of composite 3D shapes, including those made from pyramids, cones & spheres. Use multiples of pi in exact calculations.

A3
Y7 - Find the nth term of a linear sequence. Identify gradients of straight line graphs.
Y8 - Recognise quadratic sequences. Use the form y=mx+c to plot straight line graphs. Calculate the gradient of a line segment.
Y9 - Find an nth term of a quadratic sequence. State the equation of straight lines that pass through points. Plot quadratic graphs & identify the roots.

GM4
Y7 - Perform and describe transformations.
Y8 - Perform a sequence of transformations. Perform enlargements with fractional scale factors.
Y9 - Enlarge a shape given a negative scale factor. Identify scale factors in similar shapes and find missing lengths, areas or volumes.

S3
Y7 - Use relative frequency as an estimate of probability. Use sample space diagrams to record combinations of events.
Y8 - Use relative frequency as an estimate of probability. Construct a venn diagram to classify outcomes.
Y9 - Calculate the probabilities of independent & dependent combined events.

GM5
Y7 - Construct and interpret scale drawings.
Y8 - Know and apply the mass, density, volume formula.
Y9 - Solve bearing problems that involve sketching right angled triangles and using Pythagoras' Theorem.