

## Maths: Key Stage 3 Grade Descriptors KS3

	Year 7	Year 8	Year 9
Emerging	<ul style="list-style-type: none"> <li>• <b>Learn</b> to read and write whole numbers and simple decimals.</li> <li>• <b>Practise</b> counting in 2s, 5s, and 10s to build early times tables knowledge.</li> <li>• <b>Use</b> number lines to count forwards and backwards.</li> <li>• <b>Begin</b> to understand values less than zero (e.g. temperatures).</li> <li>• <b>Add and subtract</b> small numbers without support.</li> <li>• <b>Start</b> to work with money and measures involving decimal numbers.</li> <li>• <b>Recognise</b> simple patterns in counting and number sequences.</li> <li>• <b>Round</b> numbers to the nearest 10 or 100 with help.</li> <li>• <b>Write</b> numbers in parts to show their value (e.g. <math>30 + 5 = 35</math>).</li> <li>• <b>Use</b> pictures, counters or diagrams to help understand values.</li> <li>• <b>Fix</b> common mistakes in simple calculations and <b>communicate</b> their thinking.</li> <li>• <b>Use</b> blocks, number squares and drawings to explain their thinking.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Practice</b> converting between simple fractions, decimals, and percentages with support.</li> <li>• <b>Find</b> parts of amounts like <math>\frac{1}{2}</math> or 25% with and without a calculator.</li> <li>• <b>Improve</b> accuracy in adding and subtracting decimal numbers to two decimal places.</li> <li>• <b>Use</b> number lines to help solve negative number and simple integer calculations.</li> <li>• <b>Learn</b> how to make shorter, neater expressions in algebra and simplify fractions.</li> <li>• <b>Solve</b> simple, one step equations such as <math>x + 3 = 7</math> or <math>3x = 9</math></li> <li>• <b>Replace</b> variables with numbers in short expressions and calculations.</li> <li>• <b>Find</b> and <b>continue</b> patterns in number sequences.</li> <li>• <b>Explore</b> what ratios mean and using them in everyday problems, such as simple division into parts.</li> <li>• <b>Work out</b> the area of shapes like rectangles, parallelograms and triangles.</li> <li>• <b>Convert</b> between centimetres, metres and square units with support.</li> <li>• <b>Understand</b> simple rules about angles on a straight line or in a triangle.</li> <li>• <b>Read</b> and <b>plot</b> points on a grid with accuracy.</li> <li>• <b>Interpret</b> basic charts such as bar charts and pictograms.</li> <li>• <b>Understand</b> likelihood in everyday events such as rolling a die or coin flips.</li> <li>• <b>Use</b> times tables and factor knowledge to find highest and lowest common values.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Learn</b> to spot and compare simple fractions and basic probabilities (such as 1 out of 4)<b>Practice</b> how to find parts of amounts using halves, quarters, and simple percentages.</li> <li>• <b>Work</b> on expanding brackets and simplifying simple expressions.</li> <li>• <b>Use</b> a ruler and compass to draw straight lines and circles with guidance.</li> <li>• <b>Name</b> parts of a circle (like the centre or radius) and measure them with support.</li> <li>• <b>Understand</b> how to find the size or surface area of 3D shapes step by step.</li> <li>• <b>Round</b> whole numbers and simple decimals to the nearest 10 or whole number.</li> <li>• <b>Recognise</b> basic properties of 2D and 3D shapes such as triangles, squares, and cubes.</li> <li>• <b>Replacing</b> letters with numbers in simple formulas (e.g. find <math>b</math> if <math>7 + b = 10</math>)</li> <li>• <b>Plot</b> coordinates on a coordinate grid.</li> <li>• <b>Read</b> simple timetables and understand time differences.</li> <li>• <b>Use</b> angle facts to find missing angles in straightforward problems.</li> <li>• <b>Share</b> amounts or comparing values using simple ratios and proportions.</li> <li>• <b>Read</b> bar charts, pictograms, and basic tables.</li> </ul>
Developing	<ul style="list-style-type: none"> <li>• <b>Recognise</b> the place value of digits in whole numbers and decimals.</li> <li>• <b>Build fluency</b> in basic multiplication facts (times tables).</li> <li>• <b>Use</b> number lines to support understanding of number order and operations.</li> <li>• <b>Order</b> and <b>compare</b> negative numbers in context.</li> <li>• <b>Practise</b> written and mental methods for addition and subtraction.</li> <li>• <b>Understand</b> how to carry out calculations accurately with decimals.</li> <li>• <b>Reinforce</b> confidence when working with number patterns and sequences.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Convert</b> between fractions, decimals, and percentages.</li> <li>• <b>Find</b> fractions and percentages of amounts, with and without a calculator.</li> <li>• <b>Add, subtract, multiply, and divide</b> decimals and negative numbers.</li> <li>• <b>Use</b> number lines and written methods to support calculations.</li> <li>• <b>Simplify</b> simple algebraic expressions, fractions and ratios.</li> <li>• <b>Solve</b> one-step and two-step equations.</li> <li>• <b>Substitute</b> into simple algebraic expressions and formulae.</li> <li>• <b>Identify</b> term to term rules in number and pattern sequences.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Recognise</b> and <b>Find</b> fractions and percentages of quantities with growing accuracy.</li> <li>• <b>Solve</b> one- and two-step equations and inequalities and represent solutions number lines.</li> <li>• <b>Expand</b> and <b>simplify</b> expressions, including double brackets.</li> <li>• <b>Use</b> basic geometry tools like rulers, protractors and compasses with confidence.</li> <li>• <b>Identify</b> parts of circles and calculate their perimeter and area.</li> <li>• <b>Calculate</b> volumes and surface areas of prisms.</li> <li>• <b>Round</b> numbers accurately, including with significant figures.</li> <li>• <b>Understand</b> and apply properties of 2D and 3D shapes, such as simple nets.</li> </ul>

	<ul style="list-style-type: none"> <li>• <b>Improve</b> estimation and rounding when working with integers and decimal numbers.</li> <li>• <b>Read</b> and <b>write</b> numbers in expanded and standard form.</li> <li>• <b>Correct</b> misconceptions in basic number operations for integers and fractions.</li> <li>• <b>Strengthen</b> attention to detail in calculations and reduce errors in solutions.</li> <li>• <b>Support</b> understanding through models and diagrams when problem solving.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Understand</b> key ratio and proportion methods, such as simplification and sharing in a two-part ratio.</li> <li>• <b>Calculate</b> areas of rectangles, triangles, and basic compound shapes.</li> <li>• <b>Convert</b> between units of length and area, using simple metric conversions.</li> <li>• <b>Use</b> basic angle rules and recognising properties of shapes.</li> <li>• <b>Read</b> and plot coordinates on a grid.</li> <li>• <b>Represent</b> and interpreting basic probability and data and show them on simple charts and graphs.</li> <li>• <b>Find</b> prime factors, HCF, and LCM using factor methods</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Substitute</b> values into formulae and begin to rearrange them to change the subject.</li> <li>• <b>Plot</b> coordinates and straight-line graphs on a range of axes.</li> <li>• <b>Measure</b> and <b>calculate</b> time, speed, and carry out simple conversions across real world context.</li> <li>• <b>Combine</b> angle rules to solve basic geometric problems.</li> <li>• <b>Solve</b> simple ratio and proportion problems in everyday scenarios, such as price reduction and value.</li> <li>• <b>Interpret</b> data from charts, tables, and frequency diagrams.</li> </ul>
Meeting	<ul style="list-style-type: none"> <li>• <b>Order, round, and calculate</b> with integers, decimals, negative numbers, and powers.</li> <li>• <b>Multiply and divide</b> by 10, 100, and 1000 using place value understanding.</li> <li>• <b>Simplify, expand, and factorise</b> algebraic expressions involving one or more variables.</li> <li>• <b>Substitute</b> values into formulae, expressions, and real-world equations with confidence.</li> <li>• <b>Solve</b> equations, including one- and two-step problems with fractions and decimals.</li> <li>• <b>Convert</b> between units of time, length, mass, and capacity using real-life contexts such as timetables and calendars.</li> <li>• <b>Measure and calculate</b> perimeter and area of simple and compound shapes, including triangles.</li> <li>• <b>Read, plot, and interpret</b> coordinates and solve problems using shape properties.</li> <li>• <b>Identify</b> factors, multiples, primes, and use techniques like prime factor decomposition.</li> <li>• <b>Work with fractions</b>, including finding equivalents, simplifying, and operating with mixed numbers.</li> <li>• <b>Calculate and interpret</b> averages and range from data tables, pictograms, and bar charts.</li> <li>• <b>Use statistical charts</b> to collect, display, and interpret real-life data.</li> <li>• <b>Apply laws of arithmetic</b>, such as distributive and commutative properties, to solve problems efficiently.</li> <li>• <b>Understand and apply</b> angle facts to estimate, measure, and draw angles in various geometrical contexts.</li> <li>• <b>Calculate and compare</b> probabilities using appropriate phrases, diagrams, and number forms.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Calculate</b> using percentages, value for money, and percentage change.</li> <li>• <b>Apply</b> index laws, standard form, and rounding techniques with accuracy.</li> <li>• <b>Solve</b> a variety of linear equations and inequalities with confidence.</li> <li>• <b>Simplify</b> algebraic expressions and algebraic fractions using factorisation.</li> <li>• <b>Construct</b> and work with arithmetic and pattern-based sequences including nth term.</li> <li>• <b>Use and convert</b> ratios, fractions, and percentages in context</li> <li>• <b>Draw</b> and interpret graphs, scale diagrams, and pie charts</li> <li>• <b>Find</b> perimeters, areas, and volumes, including of compound 3D shapes</li> <li>• <b>Recognise</b> properties and nets of 2D and 3D shapes.</li> <li>• <b>Represent</b> data and probability using diagrams, including simple Venn diagrams.</li> <li>• <b>Estimate</b> solutions using rounding to the first significant figure.</li> <li>• <b>Work</b> with midpoints and coordinates on the x – y plane.</li> <li>• <b>Reflecting and translating</b> shapes on coordinate grids</li> <li>• <b>Combine</b> angle rules and properties to solve geometry problems</li> <li>• <b>Expand</b> single and double brackets.</li> <li>• <b>Work</b> confidently with fractions and mixed numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Convert</b> between fractions, decimals, and percentages with confidence.</li> <li>• <b>Calculate</b> fractions, percentages, and proportions in real-life contexts, such as best value and money problems.</li> <li>• <b>Solve</b> multi – step linear and quadratic equations and inequalities.</li> <li>• <b>Construct and interpret</b> frequency trees, graphs, and geometric diagrams</li> <li>• <b>Apply</b> Pythagoras’ theorem for right – angled triangles.</li> <li>• <b>Factorise</b> quadratic expressions and solve them algebraically or graphically.</li> <li>• <b>Plot and interpret</b> straight-line and quadratic graphs.</li> <li>• <b>Find</b> angles, arc lengths, areas, surface area, and volume of 2D and 3D shapes.</li> <li>• <b>Truncate and round</b> numbers, fluently and work with error intervals.</li> <li>• <b>Share</b> and simplifying ratios and solve direct/inverse proportion problems.</li> <li>• <b>Compare</b> averages, populations, and use scatter graphs to identify trends.</li> <li>• <b>Recognise</b> congruent and similar shapes and calculate lengths accordingly.</li> <li>• <b>Use</b> column vectors and interpret movement in the x – y plane.</li> <li>•</li> </ul>

- **Interpret** real-life situations involving time, temperature, money, and measurements and apply them to mathematical problems.
- **Calculate** confidently with decimals, negative numbers, and large integers.
- **Use** one calculation to inform another, improving efficiency and accuracy, e.g. converting units of time to solve compound measure problems.
- **Simplify** algebraic expressions with negative coefficients and unfamiliar variables.
- **Substitute** values into algebraic expressions, including those with indices or brackets.
- **Solve** equations involving substitution, simplification, square roots, and successive steps.
- **Apply** knowledge of time and calendars to solve problems involving clocks and leap years.
- **Analyse** shapes using angle rules, symmetry, perimeter, and area, including those with algebraic side lengths.
- **Read and plot** coordinates and determine missing points in complex geometric problems set on the coordinate plane.
- **Investigate** number properties including factors, multiples, primes, and algebraic expressions.
- **Interpret and question** statistical data by using measures of location and spread, together with understanding graph suitability and bias.
- **Perform** operations with fractions, percentages, ratios, and conversions between formats.
- **Calculate and reason** with probability, including using expected frequency to estimate outcomes.

- **Calculate** percentages, including reverse and repeated percentage problems.
- **Apply** proportional reasoning in a range of real-life contexts, such as calculating value and currency problems.
- **Solve** equations involving decimals, indices, roots, and substitutions
- **Explore** sequences and working out nth term of a linear sequence.
- **Simplify** and **work with** ratios, fractions and algebraic expressions including using factorisation to simplify an algebraic fraction.
- **Round** numbers comfortably and assess accuracy in estimation problems
- **Find** areas, perimeters, volumes, and surface areas of complex shapes, such as prisms, cylinders and compound shapes.
- **Interpret** graphs and using them to represent equations of lines and plotted shapes.
- **Reflect, translate,** and **describe** transformations using the equation of the line of reflection and vector notation, respectively.
- **Represent** data using charts and graphs and **analyse** statistics such as measures of location and spread from them.
- **Compare** exchange rates, costs, and values across different currencies
- **Identify** and **reason** about the use of index laws, including negative indices and complex simplification HCF, and LCM including using prime decomposition.
- **Recognise** and calculate with numbers in standard form and order large and small values, including recognising errors in writing and calculating in standard form.
- **Construct** Venn diagrams and **solve** probability problems using them.

- **Apply** algebra, graphs, and number skills in real-world and abstract contexts, such as speed from distance time graphs.
- **Interpret** and design experiments, probability models, and statistical data.
- **Construct** complex inequalities, equations, and graphical representations of these with precision.
- **Manipulate** expressions, quadratics, and standard form across mathematical strands.
- **Investigate** circle geometry, transformations, and bearings using proof-based reasoning.
- **Explore** congruence, similarity, and problem-solving with compound 2D and 3D shapes.
- **Reason** with ratio, percentage change, and speed problems involving compound measures.
- **Connect** representations across graphs, coordinates, and functions including quadratic and linear graphs.
- **Calculate** areas, volumes, and unknown values using combined geometric and algebraic strategies.
- **Compare** methods, identify errors, and evaluating the best approach to solve a problem across the curriculum.
- **Use** vectors, transformations, and diagrams to reason spatially and solve higher-order problems such as scaling to fractional values and describing transformations accurately using algebraic reasoning.