Maths Curriculum Progression

Lower KS2 • Upper KS2 • KS3 • KS4 Entry Level, Functional Skills and GCSE

Topic	Lower KS2	Upper KS2	KS3	KS4 Entry Level, Functional Skills and GCSE	Vocabulary progression
Number and Place Value	Read, write, order and compare numbers to 1,000. Recognise the value of each digit in a three-digit number and count in familiar multiples. Use place value in practical contexts such as shopping, lengths and journeys. Estimate and compare quantities.	Read, write, order and compare numbers to 1,000,000 or 10,000,000. Work with positive and negative numbers, including temperature and money contexts. Round to a required degree of accuracy, including decimal places, and recognise number sequences.	Work confidently with integers, decimals, fractions and negative numbers. Use inequality symbols, powers, roots, prime numbers, factors and multiples. Round to decimal places and significant figures, estimate answers and use approximation to check calculations.	**Entry Level:** Count, read, write, order and compare numbers (E1–E3 ranges); use number sequences and rounding to check answers. **Functional Skills:** Apply number, estimation and rounding to practical information and decisions. **GCSE:** Integers and decimals, ordering, negative numbers, rounding, significant figures, powers, roots, prime factors, HCF and LCM; standard form and limits of accuracy at higher stages.	**LKS2:** digit; value; compare; order; count; estimate **UKS2:** integer; negative; sequence; round; decimal; million **KS3:** factor; multiple; prime; power; root; approximation **KS4:** significant; accuracy; standard form; inequality; HCF; LCM

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Four Operations and Calculation	Add and subtract numbers mentally and use written methods for numbers up to three digits. Recall and use multiplication and division facts for familiar times tables. Multiply two-digit numbers by one-digit numbers and solve simple problems, including scaling. Use inverse operations to check answers.	Select mental and written methods for addition, subtraction, multiplication and division. Multiply multi-digit numbers by one- or two-digit numbers and divide up to four-digit numbers by one- or two-digit numbers, interpreting remainders. Solve multi-step problems and use rounding to check results.	Use all four operations with positive and negative integers and decimals. Apply order of operations, including brackets, powers and roots. Use factors, multiples and prime factors; select efficient mental or calculator methods and check answers through estimation.	**Entry Level:** Add, subtract, multiply and divide at the number range appropriate to E1–E3, including remainders at E3. **Functional Skills**: Select methods and calculators appropriately for practical, multi-step problems. **GCSE:** Apply the four operations, BIDMAS/BODMAS, factors, multiples, primes, powers and roots; use calculator methods and estimation.	**LKS2:** add; subtract; total; difference; multiply; divide **UKS2:** product; quotient; inverse; remainder; factor; multiple **KS3:** operation; bracket; reciprocal; prime; estimate; calculate **KS4:** calculator; BIDMAS; power; root; remainder; inverse

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Fractions, Decimals and Percentages	Recognise and show common equivalent fractions. Count forwards and backwards in fractions and add or subtract fractions with the same denominator. Recognise decimal equivalents of one half, one quarter and three quarters. Compare decimals to two decimal places and solve simple money and measure problems.	Compare and order fractions; simplify fractions and identify equivalent forms. Add, subtract, multiply and divide fractions at an appropriate level. Work with decimals to three decimal places, round decimals, convert between fractions and decimals, and calculate percentages of numbers and amounts.	Work interchangeably with terminating decimals and their corresponding fractions. Apply the four operations to fractions; convert between decimals, fractions and percentages. Calculate percentages of amounts, percentage change and values greater than 100%; use approximation and calculators to check results.	**Entry Level:** Recognise simple fractions, read and write decimals to one or two decimal places, and use thirds, quarters, fifths and tenths as specified at E2–E3. **Functional Skills:** Apply fractions, decimals and percentages to money, measures, shopping and everyday problems. **GCSE:** Fraction operations, percentage of amounts, recurring decimals, percentage change and conversions; higher stages include recurring-decimal conversions and more complex percentage problems.	**LKS2:** fraction; half; quarter; numerator; denominator; equivalent **UKS2:** simplify; decimal; hundredth; thousandth; mixed; percentage **KS3:** convert; terminating; recurring; increase; decrease; equivalent **KS4:** proportion; percentage; denominator; numerator; recurring; approximation

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Ratio and Proportion	Recognise simple proportional relationships in practical contexts such as recipes. Scale quantities up or down and solve simple sharing and budgeting problems. Begin to describe how quantities relate to one another.	Use ratio notation and understand that a ratio describes a relationship between quantities. Solve unequal-sharing problems and problems involving similar shapes and known scale factors. Find missing values using multiplication or division and use simple formulae.	Simplify ratios and divide a quantity into parts in a given ratio. Apply ratio to conversion, comparison, scaling, mixing and concentration contexts. Solve problems involving direct and inverse proportion, speed, density, percentage change, growth and decay where appropriate.	**Entry Level:** Develop practical multiplicative reasoning through number, measure and money tasks where appropriate. **Functional Skills:** Apply ratio and proportion to recipes, scale, best buys, quantities and practical comparisons. **GCSE:** Ratio notation, simplifying and sharing in a ratio, direct and inverse proportion, speed and density, percentage change and compound interest at the relevant stage.	**LKS2:** scale; share; quantity; recipe; compare; double **UKS2:** ratio; proportion; factor; equivalent; formula; missing **KS3:** simplify; direct; inverse; rate; density; concentration **KS4:** scale factor; unitary; multiplicative; growth; decay; interest

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Measurement, Money and Time	Estimate, compare and measure length, mass and capacity using standard units. Recognise coins and notes, compare prices and calculate change using pounds and pence. Read analogue and digital clocks, compare durations and use calendars and familiar time units.	Convert between metric units and use approximate metric–imperial equivalences. Solve problems involving length, mass, capacity, volume and time, including decimals. Calculate money problems using all four operations, interpret timetables and convert between units of time.	Use standard units for mass, length, time, money and other measures, and convert between units. Solve practical problems involving money and time. Apply appropriate accuracy and use measures in contexts such as travel, cooking, sport and everyday decisions.	**Entry Level:** Recognise and calculate with money; read clocks and dates; compare measures and use simple scales. E3 includes decimal money, rounding amounts, analogue and 24-hour time, metric/imperial measures and measuring instruments. **Functional Skills:** Apply measures, conversions, money and time to everyday tasks. **GCSE:** Convert units and use measures in ratio, speed, density and compound problems.	**LKS2:** coin; note; change; length; mass; duration **UKS2:** convert; capacity; volume; metric; imperial; timetable **KS3:** unit; estimate; accuracy; measure; temperature; scale **KS4:** pounds; pence; analogue; digital; conversion; duration
Geometry: Shapes and Properties	Recognise, make, compare and classify common 2D and 3D shapes. Describe sides, corners, faces, edges and vertices. Identify lines of symmetry, horizontal and vertical lines, and parallel and perpendicular lines. Recognise right, acute and obtuse angles.	Identify and classify polygons and 3D shapes from their properties and nets. Draw 2D shapes with given dimensions and angles. Describe properties of circles and recognise radius, diameter and circumference. Find unknown angles in triangles, quadrilaterals and regular polygons.	Use technical language to describe 2D and 3D shapes, including polygons and circle properties. Apply angle facts at a point, on a straight line and for vertically opposite angles. Calculate perimeter and area of standard and composite shapes, and use geometric properties to solve problems.	**Entry Level:** Recognise and name common 2D/3D shapes, describe properties, sort shapes and use positional vocabulary. **Functional Skills:** Interpret shapes and diagrams in practical contexts. **GCSE:** Polygon properties, angle relationships, circles, circumference and area; higher stages include angles in polygons and circles and answers in terms of π.	**LKS2:** shape; side; corner; face; edge; symmetry **UKS2:** polygon; vertex; parallel; perpendicular; radius; diameter **KS3:** circumference; tangent; chord; sector; vertically; opposite **KS4:** triangle; quadrilateral; prism; angle; regular; irregular

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Angles and Constructions	Recognise right angles and compare angles with a right angle. Describe turns and identify acute and obtuse angles. Use direction and movement activities to explore angles in familiar environments.	Measure and draw angles using a protractor. Estimate and compare acute, obtuse and reflex angles. Find missing angles in triangles, quadrilaterals and regular polygons; recognise angles on a straight line, around a point and vertically opposite angles.	Apply angle facts and relationships involving parallel and perpendicular lines. Draw and measure angles accurately, construct perpendicular bisectors and bisect angles using a compass, and construct triangles. Use angle properties to solve problems.	**Entry Level:** Recognise right angles, turns and shape properties at the appropriate level. **Functional Skills:** Use angle and direction information in diagrams and practical tasks. **GCSE:** Angles in triangles, quadrilaterals, polygons, parallel lines and circles; constructions and loci at the relevant stage.	**LKS2:** turn; right; acute; obtuse; compare; direction **UKS2:** protractor; reflex; triangle; straight; point; estimate **KS3:** construct; bisect; perpendicular; compass; alternate; corresponding **KS4:** vertically; polygon; loci; parallel; angle; bearing
Perimeter, Area, Volume and Surface Area	Measure and calculate the perimeter of simple 2D shapes. Find the area of rectilinear shapes by counting squares. Estimate and compare measures, and use practical activities to explore length, area and capacity.	Calculate perimeter of composite rectilinear shapes and area of rectangles, triangles and parallelograms. Recognise that shapes with the same area can have different perimeters. Estimate irregular areas and calculate the volume of cubes and cuboids.	Calculate perimeter and area of triangles, parallelograms, circles and composite shapes. Calculate volume of cubes, cuboids and other prisms. Use formulae and units accurately; apply the relationship between perimeter, area and volume to problems.	**Entry Level:** Measure lengths, compare sizes and calculate simple perimeter or area where appropriate. **Functional Skills:** Apply area, perimeter and volume to practical tasks such as flooring, planting, storage, packaging and DIY. **GCSE:** Perimeter and area of standard/composite shapes, circle area/circumference, volume and surface area of 3D shapes; higher stages include cones, spheres and composite solids.	**LKS2:** perimeter; area; square; length; width; estimate **UKS2:** rectangle; triangle; parallelogram; volume; cubic; capacity **KS3:** formula; composite; prism; circumference; surface; area **KS4:** radius; diameter; surface; volume; π; substitute

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Position, Direction, Transformations and Scale	Describe position and direction using everyday vocabulary. Plot specified points and complete polygons on a first-quadrant grid. Describe movements left, right, up and down, and use maps or routes in practical contexts.	Describe positions on a coordinate grid and use all four quadrants where appropriate. Reflect and translate shapes using coordinates and recognise that transformations preserve shape and size. Solve problems involving scale factors and similar shapes.	Carry out translations, reflections, rotations and enlargements. Describe transformations, including vectors, and recognise congruent and similar shapes. Use coordinates, scale diagrams, maps and bearings; solve problems involving scale factors and geometric relationships.	**Entry Level:** Use positional vocabulary and describe directions and turns, including compass points at E3. **Functional Skills:** Interpret maps, plans, scale diagrams, directions and travel information. **GCSE:** Transformations, coordinates, bearings and scale drawings; higher stages include fractional scale factors, similarity, congruence, vectors and Pythagoras' theorem.	**LKS2:** position; direction; left; right; grid; coordinate **UKS2:** translate; reflect; quadrant; axis; scale; congruent **KS3:** rotate; enlarge; vector; bearing; similar; factor **KS4:** transformation; compass; map; diagram; Pythagoras; scale

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Statistics, Data Handling and Graphs	Collect, sort and present data using tally charts, tables, pictograms and bar charts. Read simple scales and compare categories. Ask and answer questions using data, including information gathered through practical enquiries.	Interpret and construct tables, charts, line graphs and pie charts. Calculate and interpret the mean as an average. Use data from investigations and compare information presented in different forms, including graphs with two variables.	Collect and interpret data; understand data types, sampling and limitations. Construct and interpret bar charts, line graphs, stem-and-leaf diagrams, two-way tables, pie charts and frequency tables. Calculate mean, median, mode and range; interpret scatter graphs, correlation, line of best fit and time-series graphs.	**Entry Level:** Read information from lists, tables, diagrams and charts; sort and classify data; create or interpret simple charts and frequency tables at E1–E3. **Functional Skills:** Extract, compare and present information in different formats. **GCSE:** Statistical measures, charts, sampling, outliers, scatter graphs, correlation, time-series graphs and predictions.	**LKS2:** data; tally; table; pictogram; chart; category **UKS2:** graph; axis; mean; average; scale; compare **KS3:** median; mode; range; sample; frequency; correlation **KS4:** outlier; discrete; continuous; scatter; trend; prediction

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Probability	Use the vocabulary of chance, including likely and unlikely. Explore simple games of chance and discuss whether outcomes are fair. Compare the likelihood of events using everyday language.	Record, describe and analyse the frequency of simple probability experiments. Use probability vocabulary for likely, unlikely, equally likely and fair outcomes. Compare possible outcomes and discuss what results suggest.	Use the 0–1 probability scale and calculate probabilities of events and events not occurring. Understand that probabilities of all outcomes sum to one. Use sample spaces, two-way tables, frequency trees and Venn diagrams; explore relative frequency, mutually exclusive and independent events.	**Entry Level:** Use everyday likelihood language where appropriate to the qualification. **Functional Skills:** Interpret simple likelihood or risk information when it appears in practical contexts. **GCSE:** Probability scales, expected outcomes, sample spaces, Venn diagrams, relative frequency, independent/dependent events and combined probabilities; higher stages include tree diagrams.	**LKS2:** chance; likely; unlikely; fair; event; outcome **UKS2:** probability; frequency; equally; experiment; predict; scale **KS3:** sample; space; relative; independent; dependent; mutually **KS4:** exclusive; Venn; tree; diagram; randomness; likelihood

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Algebra, Sequences and Graphs	Generate and describe simple number sequences. Use simple formulae and express missing-number problems algebraically. Explore patterns and find pairs of numbers that satisfy a simple equation with two unknowns.	Generate and describe number sequences and use algebraic notation. Express missing-number problems algebraically, use simple formulae and enumerate possibilities for combinations of two variables. Use patterns to describe relationships.	Use and interpret algebraic notation; simplify expressions by collecting like terms and multiplying a term over a bracket. Substitute values into expressions and formulae, solve linear equations and generate sequences. Plot coordinates and interpret linear graphs; develop quadratic and other graphs where appropriate.	**Entry Level:** Work with number patterns and missing values where appropriate. **Functional Skills:** Use simple formulae, patterns and relationships in practical problems. **GCSE:** Expressions, equations, formulae, sequences, coordinates and linear graphs; higher stages include nth terms, indices, rearranging formulae, simultaneous equations, inequalities, quadratic equations and graph interpretation.	**LKS2:** pattern; sequence; rule; term; formula; unknown **UKS2:** algebra; symbol; variable; expression; equation; substitute **KS3:** simplify; coefficient; linear; graph; bracket; sequence **KS4:** gradient; intercept; quadratic; inequality; simultaneous; index