

MATHS: AT 1
Using and Applying Mathematics

Teachers should expect attainment at a given level in this attainment target to be demonstrated through activities in which the mathematics from the other attainment targets is at, or very close to, the same level.

NATIONAL CURRICULUM LEVEL	Using maths	Representation	Discusses their work	Explaining reasoning, patterns and relationships
Level 1	Uses mathematics as an integral part of classroom activities	Represents work with objects or pictures.	Discusses their work	Recognises and uses a simple pattern or relationship.
Level 2	Selects the mathematics they use in some classroom activities.	Is beginning to represent their work using symbols and simple diagrams.	Discusses work using mathematical language.	They explain why an answer is correct
Level 3	Tries different approaches and finds ways of overcoming difficulties that arise when solving problems	Is beginning to organise work and check results. Uses and interprets mathematical symbols and diagrams	Discusses mathematical work.	Shows understanding of a general statement by finding particular examples that match it. Is beginning to explain their thinking.
Level 4	Developing their own strategies for solving problems and uses these strategies both in working within mathematics and in applying mathematics to practical contexts.	Presents information and results in a clear and organised way.		Searches for a solution by trying out ideas of their own.
Level 5	In order to carry through tasks and solve mathematical problems, identifies and obtains necessary information. They check their results, considering whether these are sensible.	Shows understanding of situations by describing them mathematically using symbols, words and diagrams.	Shows understanding of situations by describing them mathematically using words.	They draw simple conclusions of their own and give an explanation of their reasoning.
Level 6	Pupils carry through substantial tasks and solve quite complex problems by independently breaking them down into smaller, more manageable task.	Pupils' writing explains and informs their use of diagrams.	They interpret, discuss and synthesis information presented in a variety of mathematical forms.	Pupils are beginning to give mathematical justifications.

MATHS AT 2: NUMBER AND ALGEBRA

NATIONAL CURRICULUM LEVEL	Mental Maths	Four operations	Place Value	Fractions, decimals, percentages and negative numbers.	Patterns and algebra	Co-ordinates
Level 1	Counts, orders, adds and subtracts numbers when solving problems involving up to 10 objects.		Reads and writes the numbers involved			
Level 2	Uses mental recall of addition and subtraction facts to 10. They use mental calculation strategies to solve problems involving money and measures.	Counts sets of objects reliably. Chooses the appropriate operation when solving addition and subtraction problems. They use the knowledge that subtraction is the inverse of addition.	Has begun to understand the place value of each digit in a number and uses this to order numbers up to 100.		Recognise sequences of numbers, including odd and even numbers.	
Level 3	Uses mental recall of addition and subtraction facts to 20 in solving problems involving larger numbers. They add and subtract numbers with two digits mentally.	They add and subtract numbers up to three digits using written methods. Uses mental recall of the 2, 3, 4, 5 and 10 multiplication tables and derive the associated division, including those that give rise to remainders. Uses calculator methods where numbers include several digits.	Shows understanding of place value in numbers up to 1000 and uses this to make approximations.	Has begun to use decimal notation and to recognise negative numbers, in contexts such as money and temperature. They use simple fractions that are several parts of a whole and recognise when two simple fractions are equivalent.		
Level 4	In solving number problems, pupils use a range of mental methods of computation with the four operations, including mental recall of multiplication facts up to 10 x 10 and quick derivation of corresponding division facts.	They use efficient written methods of addition and subtraction and of short multiplication and division. In solving problems with or without a calculator, checks the reasonableness of results by reference to knowledge of the context or to the size of the numbers.	Uses understanding of place value to multiply and divide whole numbers by 10 or 100.	Adds and subtracts decimals to two places and order decimals to three places. Recognises approximate proportions of a whole and uses simple fractions and percentages to describe these	Pupils recognise and describe number patterns, and relationships including multiple, factor and square. Has begun to use simple formulae expressed in words	Uses and interprets co-ordinates in the first quadrant.
Level 5	Understands and uses an appropriate non-calculator method for solving problems that involve multiplying and dividing any three-digit number by any two-digit number.	Checks solutions by applying inverse operations or estimating using approximations.	Uses understanding of place value to multiply and divide whole numbers and decimals by 10, 100 or 1000.	Orders, adds and subtracts negative numbers in context. Uses all four operations with decimals to two places. They reduce a fraction to its simplest form by cancelling common factors. They solve simple problems involving ratio and direct proportion. They calculate fractional or percentage parts of quantities and measurements, using a calculator where appropriate.	They construct, express in symbolic form, and use simple formulae involving one or two operations. They use brackets appropriately.	Pupils use and interpret co-ordinates in all four quadrants.
Level 6		Pupils order and approximate decimals when solving numerical problems and equations (for example ITEM 63) using trial-and-improvements methods.		Pupils are aware of which number to consider as 100%, or a whole, in problems involving comparisons, and use this to evaluate one number as a fraction or percentage of another. They understand and use the equivalence between fractions, decimals and percentages, and calculate using ratios in appropriate situations. They add and subtract fractions by writing them with a common denominator.	When exploring number sequences, pupils find and describe in the rule for the next term or nth term of a sequence where the rule is linear. They formulate and solve linear equations with whole-number coefficients. They represent mappings algebraically.	They use Cartesian co-ordinates for graphical representation interpreting general features.

MATHS AT3
Shape, Space and Measures

National Curriculum Levels	2D shape	3D shape	Measures	Angles	Area and Perimeter	Volume and Capacity
Level 1	When working with 2D shapes, uses everyday language to describe properties and positions.	When working with 3D shapes, uses everyday language to describe properties and positions	Measures and orders objects using direct comparison, and orders events.			
Level 2	Uses mathematical names for common 2D shapes and describes their properties, including numbers of sides and corners.	Uses mathematical names for common 3D shapes and describes their properties, including numbers of sides and corners.	Has begun to use everyday non-standard and standard units to measure length and mass.	Distinguishes between straight and turning movements, understands angle as a measurement of turn, and recognises right angles in turns.		
Level 3	Classifies 2D shapes in various ways using mathematical properties such as reflective symmetry.	Classifies 3D shapes in various ways using mathematical properties.	Uses non-standard units, standard metric units of length, capacity, mass and standard units of time, in a range of contexts			
Level 4	Draws common 2D shapes in different orientations on grids. Reflects simple shapes in a mirror line.	Makes 3D mathematical models by linking given faces or edges.	Chooses and uses appropriate units and instruments, interpreting, with appropriate accuracy, numbers on a range of measuring instruments.		Finds perimeters of simple shapes. Finds areas by counting squares	
Level 5	Identifies all the symmetries of 2D shapes.		Knows the rough metric equivalents of Imperial units still in daily use and converts one metric unit to another. Makes sensible estimates of a range of measures in relation to everyday situations	When constructing models and when drawing or using shapes, measures and draws angles to the nearest degree and uses language associated with angle. Pupils know the angle sum of a triangle and that of angles at a point.	Pupils understand and use the formula for the area of a rectangle.	
Level 6	Pupils recognise and use common 2D representations of 3D objects. They know and use the properties of quadrilaterals in classifying different types of quadrilateral. They solve problems using angle and symmetry properties of polygons. They enlarge shapes by a positive whole-number scale factor.	Pupils recognise and use common 2D representations of 3D objects.		They solve problems using angle properties of intersecting and parallel lines, and explain these properties. They devise instructions for a computer to generate and transform shapes or paths.	They understand and use appropriate formulae for finding circumferences and areas of circles and areas of plane rectilinear figures.	They understand and use appropriate formulae for finding volumes of cuboids when solving problems.

MATHS AT4
Handling Data

The attainment target does not apply at KS1.

National Curriculum Levels	Sorting and classifying	Graphs - construction	Graphs - interpretation	Mode, median, mean and range	Probability
Level 1	Sorts objects and classifies them, demonstrating the criterion they have used.				
Level 2	Sorts objects and classifies them using more than one criterion.	From gathered information, records results in simple lists, tables and block graphs, in order to communicate their findings.			
Level 3		Constructs bar charts and pictograms, where the symbol represents a group of units, to communicate information gathered.	Extracts and interprets information presented in simple tables and lists. Interprets information presented in bar charts and pictograms, where the symbol represents a group of units.		
Level 4		Collects discrete data and records them using a frequency table. Groups data, where appropriate, in equal class intervals, represents collected data in frequency diagrams. Constructs simple line graphs.	Interprets frequency diagrams of group data. Interprets simple line graphs.	Understands and uses the mode and the range to describe sets of data.	
Level 5			Interprets graphs and diagrams, including pie charts, and draws conclusions.	Understands and uses the mean of discrete data. Compares two simple distributions, using the range and one of the mode, median or mean.	Understands and uses the probability scale from 0 to 1. Finds and justifies probabilities, and approximations to these, by selecting and using methods based on equally likely outcomes and experimental evidence, as appropriate. Understands that different outcomes may result from repeating an experiment.
Level 6		Pupils collect and record continuous data, choosing appropriate equal class intervals over a sensible range to create frequency tables. They construct pie charts.	They construct and interpret frequency diagrams. Pupils draw conclusions from scatter diagrams, and have a basic understanding of correlation. When dealing with a combination of two experiments, pupils identify all the outcomes, using diagrammatic, tabular or other forms of communication.		In solving problems they use their knowledge that the total probability of all the mutually exclusive outcomes of an experiment is 1.