

Netherthorpe mathematics levels

Level	In number and algebra students:	In geometry and measure students:	When handling data students:
1	Count, order, combine, increase and decrease quantities when solving problems in practical contexts. They read and write the numbers involved.	When working with 2-D and 3-D shapes, pupils use mathematical language to describe properties and positions. They measure and order objects using direct comparison, and order events.	Pupils sort objects and classify them, demonstrating the criterion they have used. They collect data to answer questions.
2	Count sets of objects reliably, and use mental recall of addition and subtraction facts to 10. They begin to understand the place value of each digit in a number and use this to order numbers up to 100. They choose the appropriate operation when solving addition and subtraction problems. They use the knowledge that subtraction is the inverse of addition. They use mental calculation strategies to solve number problems involving money and measures. They recognise sequences of numbers, including odd and even numbers.	Pupils use mathematical names for common 3-D and 2-D shapes and describe their properties, including numbers of faces, edges and vertices. They distinguish between straight and turning movements, recognise angle as a measurement of turn, and right angles in turns. They begin to use everyday non-standard and standard units to measure length and mass.	Pupils sort objects and classify them using more than one criterion. When they have gathered information to answer a question or explore a situation, pupils record results in simple lists, tables, diagrams and block graphs, in order to communicate their findings.
3	Use place value up to 1000. Recognise and start to use decimal and negative numbers. Recall the 2, 3, 4, 5 and 10 multiplication tables. Use simple fractions. Recognise equivalent fractions.	Classify 3-D and 2-D shapes in various ways using mathematical properties such as reflective symmetry for 2-D shapes. Use non-standard units (e.g. counting squares or cubes). Use standard metric units of length, capacity and mass. Use standard units of time, in a range of contexts.	Extract and interpret information in simple tables and lists. Construct and interpret bar charts and pictograms.
4	Plot and identify coordinates in the first quadrant. Add and subtract up to two decimal places. Multiply and divide by 10 and 100. Find factors and multiples of numbers and square numbers. Order decimals.	Find areas by counting squares. Use ruler and other scales for measurement. Make 3D models by joining faces and edges together. Calculate perimeters. Draw common 2D shapes in different views.	Draw and use line graphs. Use mode and range. Group data in equal ranges. Collect and use discrete data. Draw and use frequency diagrams.

	Recall multiplication tables up to 10 x 10.	Reflect shapes in a mirror line.	
5	<p>Cancel fractions.</p> <p>Understand and use BODMAS.</p> <p>Solve problems involving negative numbers.</p> <p>Express comparisons of quantities using ratio and proportion.</p> <p>Multiply and divide a 3 digit number by a 2 digit number.</p> <p>Estimate using approximations.</p> <p>Find fractions and percentages of quantities.</p> <p>Plot and identify coordinates in all four quadrants.</p>	<p>Measure and draw angles to nearest degree.</p> <p>Use formula for the area of a rectangle.</p> <p>Estimate lengths.</p> <p>Estimate between imperial and metric units.</p> <p>Convert one metric unit to another.</p> <p>Calculate unknown angles in triangles and at a point.</p> <p>Describe angles in correct terms.</p> <p>Find symmetry in 2D shapes.</p>	<p>Interpret graphs and diagrams and draw conclusions.</p> <p>Compare distributions using the range and an average.</p> <p>Draw and use a probability scale.</p> <p>Calculate mean and median.</p> <p>Use and interpret pie charts.</p> <p>Understand and calculate theoretical probabilities.</p> <p>Understand and calculate experimental probabilities.</p>
6	<p>Add and subtract fractions.</p> <p>Solve equations using trial and improvement.</p> <p>Round to decimal places.</p> <p>Calculate using ratios.</p> <p>Round to significant figures.</p> <p>Find the nth term of a linear sequence.</p> <p>Use equivalent fractions, percentages and decimals.</p> <p>Express one number as a percentage or fraction of another.</p>	<p>Calculate the area and circumference of a circle.</p> <p>Understand and recall the properties of polygons.</p> <p>Find missing angles using intersecting and parallel lines.</p> <p>Recall the special properties of quadrilaterals.</p> <p>Enlarge shapes given a scale factor.</p> <p>Calculate the volume of a cuboid.</p> <p>Use simple plans and elevations.</p> <p>Draw nets of shapes.</p>	<p>Draw possibility space diagrams.</p> <p>Read two-way tables.</p> <p>Identify all possible outcomes of two events.</p> <p>Draw scatter diagrams and understand correlation.</p> <p>Understand how mutually exclusivity affects combined and independent events.</p> <p>Construct pie charts.</p> <p>Construct and interpret frequency diagrams.</p>
7	<p>Expand single and double brackets.</p> <p>Solve simultaneous equations.</p> <p>Solve problems using direct and inverse proportion.</p> <p>Solve simple inequalities.</p> <p>Multiply and divide by a number less than 1.</p> <p>Estimate by rounding to one significant figure.</p>	<p>Calculate missing lengths using Pythagoras' Theorem.</p> <p>Draw the locus of a point.</p> <p>Solve problems using speed, distance, time and mass, volume, density.</p> <p>Calculate lengths, areas and volume in shapes and prisms</p> <p>Consider rounding accuracy when solving problems.</p>	<p>Select the most appropriate average.</p> <p>Find modal class.</p> <p>Understand and use relative frequency.</p> <p>Draw a line of best fit on a scatter diagram.</p> <p>Make and test a hypothesis.</p> <p>Use and interpret frequency polygons.</p>

8	<p>Sketch linear, quadratic, cubic and reciprocal graphs.</p> <p>Factorise quadratic expressions.</p> <p>Multiply out two linear expressions.</p> <p>Rearrange algebraic formulae.</p> <p>Convert numbers in and out of standard form.</p>	<p>Use congruency and similarity</p> <p>Use sine, cosine and tangent in right-angled triangles.</p>	<p>Use and draw cumulative frequency diagrams.</p> <p>Estimate the median & interquartile range from a cumulative frequency diagram.</p> <p>Use tree diagrams to calculate probabilities.</p> <p>Use multiplication and addition rules of probability.</p>
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