

Mathematics; Gateshead Assessment Profile (MGAP)

Year 2 Understanding and investigating within number

	Developing Y2 expectations	Mastering Y2 expectations	Going to greater depth with Y2 expectations
Place value, ordering and rounding			
<ul style="list-style-type: none"> Counting, reading and writing numbers 	Counts, reads and writes numbers from 1-100 in numerals and up to at least 20 in words.	Counts, reads and writes numbers to at least 100 in numerals and in words with mostly accurate spelling.	<p>Demonstrates understanding of place value by solving more complex problems requiring higher levels of reasoning.</p> <p>Tackles problems with more than one possible answer in contexts using numbers, practical representations or money for example how they know they have found all solutions.</p> <p>Extends knowledge of the number system through exploring patterns on a range of number lines and grids answering questions and explaining how they decided on their answer.</p> <p>Solves and poses number puzzles using understanding of number order, pattern within and properties of numbers.</p>
<ul style="list-style-type: none"> Comparing and ordering numbers 	Continues to confidently identify and represent numbers to 20 and beyond using objects and structured apparatus and a number line. Compares and orders numbers up to 100; Starts to use <, > and = signs	Identifies, represents and estimates numbers to 100 and beyond, using different representations, including the number line Compares and orders numbers from 0 – 100 and beyond; uses <, > and = signs confidently.	
<ul style="list-style-type: none"> Place value 	The pupil can demonstrate an understanding of place value, though may still need to use apparatus to support them (e.g. by stating the difference in the tens and ones between 2 numbers i.e. 77 and 33 has a difference of 40 for the tens and a difference of 4 for the ones; by writing number statements such as $35 < 53$ and $42 > 36$).	The pupil can partition two-digit numbers into different combinations of tens and ones. This may include using apparatus (e.g. 23 is the same as 2 tens and 3 ones which is the same as 1 ten and 13 ones). Starts to recognise the role of zero as a place holder.	
Properties of numbers and number sequences			
<ul style="list-style-type: none"> Counting in multiples 	Count in twos, fives and tens from 0 and use counting strategies to solve problems (e.g. count the number of chairs in a diagram when the chairs are organised in 7 rows of 5 by counting in fives).	Counts in multiples of 2s, 5s and 10s and starts to count in multiples of 3 to at least 30.	<p>Fluently counts forwards and back in multiples of 2, 5 and 10 from different multiples being able to extend beyond 100 using understanding of patterns in the multiples.</p> <p>Confidently counts in multiples of 3 to at least 30.</p> <p>Explores and discusses patterns in the number system</p>
<ul style="list-style-type: none"> Recognising and describing patterns 	Start to recognise patterns in the number system including odd and even numbers.	Develops understanding of a wider range of pattern in the number system including odd and even numbers.	<p>Explores more complex part/whole diagrams and identifies fraction that is shaded. Compares fractions using pictures or representations to support thinking and explanations.</p> <p>Identifies a number given a fraction of it ($1/4$ of $\Delta = 20$)</p> <p>Solves more complex fraction problems giving explanations of reasoning and methods e.g. 20 children are in a class and $1/4$ are girls. How many boys?</p> <p>Finds and compares fractions of amounts (e.g. $1/4$ of $\pounds 20 = \pounds 5$ and $1/2$ of $\pounds 8 = \pounds 4$ so $1/4$ of $\pounds 20$ is greater than $1/2$ of $\pounds 8$ including in problem solving contexts.</p>
Fractions	Confidently recognises, finds and names one half / one quarter as two / four equal parts of a wide range of objects shapes, measures or quantities. Demonstrates understanding with practical materials, pictures and explanations.	Recognizes, finds, names and writes fractions $1/2$, $1/3$, $1/4$, $2/4$ and $3/4$ of a length, shape and set of objects or a quantity and knows all parts must be equal parts of a whole. Recognizes the equivalence of $2/4$ and $1/2$ Writes simple fractions e.g. $1/2$ of $6 = 3$	
	Connects unit fractions to equal sharing and grouping and begins to use this to solve simple problems supported by practical materials.	Connects unit fractions to equal sharing and grouping in a wider range of contexts and solves problems, involving numbers, shapes, money or measures using fraction notation and explaining methods.	
	Starts to understand fractions as numbers and to count in steps of halves and quarters.	Counts in steps of halves and quarters beyond one. Starts to use $1/2$ and $2/4$ equivalence on number lines.	

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Year 2 Developing and applying calculation

	Developing Y2 expectations	Mastering Y2 expectations	Going to greater depth with Y2 expectations
Addition and subtraction <ul style="list-style-type: none"> Understanding number operations and the links between them 	Recognize and use the inverse relationship between addition and subtraction and use this to solve missing number problems with single digit numbers	Recognize and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems (e.g. $\Delta - 14 = 28$).	Applies understanding and recall of number facts and the inverse relationship between addition and subtraction to check calculations and solve more complex missing number problems (e.g. $14 + \Delta - 3 = 17$; $14 + \Delta = 15 + 27$). Reason about addition (e.g. pupil can reason that the sum of 3 odd numbers will always be odd) and subtraction e.g. explain how to find two numbers that have a difference of two. Solves number puzzles and problems using understanding of number operations e.g. I am thinking of a number, I subtract 5 and the answer is 24, what was my number? Or; Jack and Sam have £12 in total, Jack has £2 more than Sam. How much do they each have?
	Starts to show that addition of two numbers can be done in any order (commutative)	Shows that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.	
		Starts to check calculations e.g. adding back to check subtractions /adding numbers in different order to check addition e.g. $5 + 2 + 1 = 1 + 2 + 5$.	
Addition and subtraction <ul style="list-style-type: none"> Recall of number facts 	Recalls and uses addition and subtraction facts for all numbers to 10 and relates to bonds for 20. (e.g. $18 = 9 + ?$; $15 = 6 + ?$).	Recalls and uses addition and subtraction facts to 20	
	The pupil can recall doubles and halves to 20 (e.g. pupil knows that double 2 is 4, double 5 is 10 and half of 18 is 9).	Derives and uses related facts to 100 and beyond e.g. uses $3 + 7 = 10$ to calculate $30 + 70 = 100$ or $100 - 30 = 70$	
Addition and subtraction <ul style="list-style-type: none"> Mental calculation 	The pupil can add and subtract a two-digit number and ones and a two-digit number and tens where no regrouping is required (e.g. $23 + 5$; $46 + 20$), they can demonstrate their method using concrete apparatus or pictorial representations.	Add and subtract numbers using concrete objects, pictorial representations, and mentally including; <ul style="list-style-type: none"> 2 digit numbers and 1s 2 digit number and 10s Adding 2 two-digit numbers within 100 (e.g. $48 + 35$) and can demonstrate their method using concrete apparatus or pictorial representations. Use estimation to check that their answers to a calculation are reasonable (e.g. knowing that $48 + 35$ will be less than 100). <ul style="list-style-type: none"> Adding 3 single digit numbers Subtract mentally a two-digit number from another two-digit number when there is no regrouping required (e.g. $74 - 33$). 	Adds and subtracts numbers using concrete objects, pictorial representations, and mentally including; <ul style="list-style-type: none"> A two-digit number and ones A two digit number and tens Two two-digit numbers (involving regrouping for addition and subtraction e.g. $52 - 27$; $91 - 73$). Three single digit numbers
	Solves and simple 1 or 2 step problems using concrete objects and pictorial representations, including those involving number, quantities and measures.	Solves and poses simple 2 step problems and reasoning puzzles <ul style="list-style-type: none"> Use concrete objects and pictorial representations, including those involving number, quantities and measures. 	Solve and poses more complex problems such as 3 step problems and reasoning puzzles with addition and subtraction. <ul style="list-style-type: none"> Use concrete objects and pictorial representations, including those involving

		<ul style="list-style-type: none"> Apply increasing knowledge of mental and written methods. <p>Uses the language of sum and difference</p>	<p>number, quantities and measures.</p> <ul style="list-style-type: none"> Apply increasing knowledge of mental and written methods.
Multiplication and division			
<ul style="list-style-type: none"> Understanding number operations and the links between them 	Starts to understand that multiplication of two numbers can be done in any order (commutative).	Shows that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.	Makes connections between the tables. Connects the 10 multiplication table to place value and multiplication and division by 10 and use known multiplication and division facts to derive others e.g. $2 \times 20 = 40$
<ul style="list-style-type: none"> Recall of number facts 	Recall multiplication facts for the 10 multiplication table and use them to derive division facts and count in steps of 10 answer questions	<p>The pupil can recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables to solve simple problems, demonstrating an understanding of commutativity as necessary (e.g. knowing they can make 7 groups of 5 from 35 blocks and writing $35 \div 5 = 7$; sharing 40 cherries between 10 people and writing $40 \div 10 = 4$; stating the total value of six 5p coins).</p> <p>Starts to connect the tables Connects the ten multiplication table to place value and the five multiplication table to divisions on a clock face.</p> <p>Recognises odd and even numbers.</p>	<p>Use multiplication facts to make deductions outside known multiplication facts (e.g. knows that multiples of 5 have one digit of 0 or 5 and uses this to reason that 18×5 cannot be 92 as it is not a multiple of 5).</p> <p>Determines remainders given known facts (e.g. given $15 \div 5 = 3$ and has a remainder of 0, pupil recognises that $16 \div 5$ will have a remainder of 1; knowing that $2 \times 7 = 14$ and $2 \times 8 = 16$, pupil explains that making pairs of socks from 15 identical socks will give 7 pairs and one sock will be left)</p>
<ul style="list-style-type: none"> Mental calculation 			
	Starts to calculate mathematical statements for multiplication and division within the multiplication tables and writes them using the multiplication (x) and division (÷) and equals (=) signs	Calculates mathematical statements for multiplication and division within the multiplication tables and writes them using the multiplication (x) and division (÷) and equals (=) signs	The pupil can recognise the relationships between addition and subtraction and can rewrite addition statements as simplified multiplication statements (e.g. $10 + 10 + 10 + 5 + 5 = 3 \times 10 + 2 \times 5 = 4 \times 10$).
	Continues to become more confident in solving one step problems involving multiplication and division , by calculating the answer using objects, arrays and pictorial representations with support. Developing an understanding of grouping and sharing as it relates to multiplication and division	<p>Solve one step problems involving multiplication and division using:</p> <ul style="list-style-type: none"> materials, arrays, repeated addition, recall of multiplication and division facts <p>Problems should be in a range of contexts including measures</p> <p>Demonstrates understanding of grouping and sharing and how they relate to multiplication and division / doubling and halving / fractions</p>	<p>The pupil can solve word problems that involve more than one step (e.g. which has the most biscuits, 4 packets of biscuits with 5 in each packet or 3 packets of biscuits with 10 in each packet?).</p> <p>Solve more complex problems involving multiplication and division using materials, arrays, repeated addition, mental methods and (increasingly, recall of) multiplication and division facts including problems in contexts including measures.</p> <p>Connect unit fractions to equal sharing and grouping, to numbers when they can be calculated, and to measures, finding fractions of lengths, quantities, sets of objects or shapes.</p>

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Year 2 Measurement

Measurement	Developing Y2 expectations	Mastering Y2 expectations	Going to greater depth with Y2 expectations
<ul style="list-style-type: none"> length mass temperature capacity 	<p>Measures and records using e.g. rulers, metre sticks</p> <ul style="list-style-type: none"> lengths and heights (m/cm) mass (kg/g) temperature (°C) capacity (litres/ml) <p>to nearest appropriate unit using standard units and uses these to describe, compare and solve practical problems e.g. Who is taller? Which is heavier?</p>	<p>Chooses and uses appropriate standard units and equipment to estimate, measure and record accurately to the nearest appropriate standard unit</p> <ul style="list-style-type: none"> lengths and heights in any direction (m/cm) mass (kg/g) temperature (°C) capacity (litres/ml) <p>The pupil can read scales in divisions of ones, twos, fives and tens in a practical situation where all numbers on the scale are given (e.g. pupil reads the temperature on a thermometer or measures capacities using a measuring jug).</p> <p>Use skills to describe, compare and solve a wider range of more complex practical problems e.g. How much longer is this ribbon than this one?</p>	<p>Chooses and uses appropriate standard units and equipment to estimate, measure and record accurately to the nearest appropriate standard unit using standard abbreviations as for mastery.</p> <p>Uses these to describe, compare and solve more complex problems involving interpretation of and reasoning about given practical situations involving objects and scales of various types e.g. How much longer is this ribbon than this one?</p> <p>Uses knowledge of the number system to support accurate measuring and uses simple multiples to compare measures e.g. 'half as high', twice as high'</p> <p>The pupil can read scales in divisions of ones, twos, fives and tens in a practical situation where not all numbers on the scale are given</p>
	<p>Compare and order lengths, mass, volume/capacity using appropriate comparative language such as long / longer / heavier.</p>	<p>Compare and order lengths, mass, volume/capacity and record results using >, < and = and appropriate comparative language</p>	<p>Compare and order lengths, mass, volume/capacity and record results using >, < and = and a wide range of accurate comparative language</p>
<ul style="list-style-type: none"> Time 	<p>Continues to be fluent with language relating to dates; days of week, months, years.</p> <p>Reads the time to the hour and half hour confidently, using vocabulary of o'clock and half past. Starts to use quarter past /to. Draws the hands on a clock face to show these times.</p>	<p>Compares and sequence intervals of time</p> <p>Tells and writes the time to fifteen minutes, including quarter past / to the hour and draw the hands on a clock face to show these times.</p> <p>Know the number of minutes in an hour and the number of hours in a day.</p>	<p>Fluent with telling and recording the time to five minutes on an analogue clock.</p> <p>Uses knowledge about time and ability to read a clock to solve problems.</p>
<ul style="list-style-type: none"> Money 	<p>Recognises the value of different denominations of coins and notes.</p> <p>Begin to recognise and use symbols for pounds (£) and pence (p)</p> <p>Makes connections between values of coins e.g. five 1p coins being of the same value as one 5p coin or two 5p coins being of equal value to one 10p coin.</p>	<p>Recognise and use symbols for pounds (£) / pence (p)</p> <p>Combine amounts to make a particular value</p> <p>Find different combinations of coins that equal the same amounts of money.</p> <p>Solve simple problems in a practical context involving addition and subtraction of money of the same unit including giving change</p>	<p>Find all possible combinations of coins to equal a given amount or how to pay a given amount using the fewest possible number of coins</p> <p>Solve more complex problems involving money including comparison and all possibility problems.</p>

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Year 2 Geometry

	Developing Y2 expectations	Mastering Y2 expectations	Going to greater depth with Y2 expectations
Geometry			
<ul style="list-style-type: none"> Properties of shapes 	<p>The pupil can recognise and name triangles, rectangles, squares, circles, cuboids, cubes, pyramids and spheres from a group of shapes or from pictures of the shapes.</p> <p>Starts to recognise pentagons and hexagons.</p> <p>Recognises the same shapes in different orientations.</p>	<p>Developing the use of precise mathematical vocabulary to identify and describe the properties of a wide variety of 2D shapes including line symmetry (displayed in a range of orientations). (e.g. a triangle: it has 3 sides, 3 vertices and 1 line of symmetry; Identifies 2-D shapes on the surface of some 3-D shapes (for example the circle on a cylinder and a triangle on a pyramid.)</p>	<p>The pupil can describe similarities and differences between 2D and 3D shapes using properties (e.g. finds 2 different 2-D shapes that only have one line of symmetry; that a cube and a cuboid have the same number of edges, faces and vertices but can describe what is different about them) using precise mathematical vocabulary.</p> <p>Compare and sort common 2D and 3D shapes and everyday objects explaining the reasons for their categories using precise mathematical vocabulary. Use more than 1 criterion to sort and identify and describe properties.</p> <p>Explores creating 2D and 3D shapes in different ways and describes the shapes made. Creates shapes to given criteria and justifies the result.</p> <p>Draws shapes using a straight edge.</p> <p>Explores and suggests conjectures about shapes</p>
	<p>Recognise, name and describe some properties of common 3-D shapes including pyramids, cones and spheres.</p>	<p>Developing the use of precise mathematical vocabulary to identify and describe the properties of a variety of 3D shapes including the number of edges, vertices and faces. E.g. a pyramid: it has 8 edges, 5 faces, 4 of which are triangles and one is a square).</p>	
	<p>Compares and sorts common 2D and 3D shapes using given criteria.</p>	<p>Compares and sort common 2-D and 3-D shapes and everyday objects, on the basis of their geometric properties including vertices, sides, edges and faces. Suggests criteria for sorting.</p>	
<ul style="list-style-type: none"> Position and direction 	<p>Recognises and creates a range of pattern structures with shapes e.g. circle, circle, square, circle, circle, square and uses mathematical language to describe the pattern and to identify if there is an error or omission in the pattern.</p>	<p>Orders and arranges combinations of mathematical objects in patterns and sequences. Uses a wider range of mathematical language to describe the pattern Start to solve problems related to patterns and sequences, explaining reasoning.</p>	<p>Order and arrange combinations of mathematical objects (including shapes in different orientations) in more complex patterns and sequences. Explains the pattern or sequence and uses understanding of them to solve problems e.g. what will the tenth shape be if we extend the pattern? How do you know?</p>
	<p>Continue to use of mathematical language to describe positions, directions and movement, including whole, half, quarter and three-quarter turns. Connect turning clockwise with movements of hands on a clock face. Solve simple problems involving position and direction with support</p>	<p>Use mathematical language to describe position, direction and movement, including movement in a straight line and turning movements. Distinguish between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise)</p> <p>Start to apply understanding to independently solving problems related to position and direction.</p>	<p>Use precise mathematical vocabulary to describe position, direction and movement, including movement in a straight line and turning. Distinguish between rotation as a turn and in terms of right angles for quarter, half and three quarter turns (clockwise and anti-clockwise).</p> <p>Confidently apply understanding of position and direction to solve more complex problems and to pose problems of their own.</p>

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Year 2 Statistics

Statistics	Developing Y2 expectations	Mastering Y2 expectations	Going to greater depth with Y2 expectations
	<p>Interprets and constructs simple pictograms where the picture is worth one unit.</p> <p>Interpret and construct simple tally charts and block diagrams.</p>	<p>Interpret and construct simple pictograms, tally charts, block diagrams and simple tables. including pictograms with many to one correspondence with simple ratios 2, 5 and 10)</p>	<p>Interpret, construct and compare a wider range of pictograms, tally charts, block diagrams and tables with more complex scales and pictogram ratios as appropriate.</p> <p>Present given information using a different representations</p>
	<p>Ask and answer questions that require counting the number of objects in each category.</p>	<p>Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity e.g. using Venn and Carroll diagrams.</p> <p>Ask and answer questions about totalling and comparing categorical data.</p>	<p>Ask and answer more complex questions related to a wider range of charts involving totalling and comparing categorical data.</p>