



### Progression of skills: Maths - Geometry

**Curriculum intent:**

At Shawclough, our intent for Mathematics is to teach a rich, balanced and progressive curriculum using Maths to reason, problem solve and develop fluent conceptual understanding in each area. Our curriculum allows children to better make sense of the world around them by making connections between Mathematics and everyday life. Our policies, resources and schemes of work support our vision and clearly outline where Maths can be incorporated across different curriculum areas. The structure of the Mathematics curriculum across school shows clear progression in line with age related expectations. Teaching curriculum content in blocks allows children to explore skills and knowledge in depth and gain a secure understanding of particular subject matter. Key knowledge and skills are also revisited regularly allowing repetition to embed learning. A concrete, pictorial, abstract approach provides children with a clear structure in which they can develop their depth of understanding of mathematical concepts. We aim to ensure that Mathematics is a high profile subject which children view positively and with a 'Can do' attitude.

For the youngest children developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationship between and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding- such as using manipulative, including small pebbles and tens frames for organising counting – children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes

<b>Intended Experiences</b> <b>Nursery</b>	<b>Intended Experiences</b> <b>Reception</b>	<b>Early Learning Goal</b> <b>Maths – Numerical pattern</b>
<p>To spot patterns and talk about them e.g. stripes on a scarf. To react to changes in amounts e.g in hiding and returning rhymes (two little dicky birds)</p> <p>To notice and arrange things in patterns</p> <p>To begin to understand position through words alone e.g. in front behind</p> <p>To begin to use vocabulary to describe the time of day e.g. morning, afternoon, evening, yesterday, tomorrow</p> <p>To select shapes appropriately when building</p> <p>To extend a pattern that has been made and create my own simple patterns (ABAB)</p> <p>To start to talk about upcoming events e.g. Birthdays and then talk about what happened after the event</p> <p>To understand in front behind, on top, next to</p> <p>To talk about patterns and spot errors</p> <p>To continue and create patterns</p> <p>To sequence a pattern of events using time language e.g. first, next, then.</p> <p>To talk about 2D and 3D shapes (using informal vocab e.g. sides, straight, round, flat)</p> <p>To describe a familiar route using vocab e.g. in front, behind</p>	<p>To understand the ‘one more than/one less than’ relationship between consecutive numbers ·</p> <p>To link the number symbol (numeral) with its cardinal number value.</p> <p>To count to 10 by rote To compare manipulatives (e.g. saying when one tower is bigger/smaller)</p> <p>To find one more/ one less using resources</p> <p>To continue and copy patterns</p> <p>To create their own patterns</p> <p>To subitise, recall number bonds, estimate and compare quantities and have a deep understanding of number to 10.</p> <p>To count to 20, knowing the teen numbers ·</p> <p>To compare two quantities saying when one is bigger/smaller/ same</p> <p>To say a number that is one more/ less without resources. To spot errors in the pattern and can name a pattern e.g. ABAB</p> <p>To start to identify odd and even numbers linked to sharing</p>	<p>Verbally count beyond 20, recognising the pattern of the counting system. · Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity. Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally</p>

**IDENTIFYING SHAPES AND THEIR PROPERTIES**

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Recognise and name common 2-D and 3-D shapes, including:                      2-D shapes [e.g. rectangles (including squares), circles and triangles]                      3-D shapes [e.g. cuboids (including cubes), pyramids and spheres].</p>	<p>Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line.</p>		<p>Identify lines of symmetry in 2-D shapes presented in different orientations.</p>	<p>Identify 3-D shapes, including cubes and other cuboids, from 2-D representations.</p>	<p>Recognise, describe and build simple 3-D shapes, including making nets (appears also in Drawing and Constructing).</p>
	<p>Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces.</p>				<p>Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.</p>
	<p>Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid].</p>				

**DRAWING AND CONSTRUCTING**

		Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them.	Complete a simple symmetric figure with respect to a specific line of symmetry.	Draw given angles, and measure them in degrees (°)	Draw 2-D shapes using given dimensions and angles.
					Recognise, describe and build simple 3-D shapes, including making nets (appears also in Identifying Shapes and Their Properties).

**COMPARING AND CLASSIFYING**

	Compare and sort common 2-D and 3-D shapes and everyday objects.		Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes.	Use the properties of rectangles to deduce related facts and find missing lengths and angles.	Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons.
				Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.	

**ANGLES**

		Recognise angles as a property of shape or a description of a turn.		Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles	
		Identify right angles, recognise that two right	Identify acute and obtuse angles and	Identify:	Recognise angles where they meet at a point,

		angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle.	compare and order angles up to two right angles by size.	<ul style="list-style-type: none"> <li>- Angles at a point and one whole turn (total 360°)</li> <li>- Angles at a point on a straight line and <math>\frac{1}{2}</math> a turn (total 180°)</li> <li>- Other multiples of 90°.</li> </ul>	are on a straight line, or are vertically opposite, and find missing angles.
		Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.			

### POSITION, DIRECTION AND MOVEMENT

Describe position, direction and movement, including half, quarter and three-quarter turns.	Use mathematical vocabulary to describe position, direction and movement including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise).		Describe positions on a 2-D grid as coordinates in the first quadrant.	Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.	Describe positions on the full coordinate grid (all four quadrants).
			Describe movements between positions as translations of a given unit to the left/right and up/down.		Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.
			Plot specified points and draw sides to complete a given polygon.		

### PATTERN

	Order and arrange combinations of mathematical objects in patterns and sequences.				
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**VOCABULARY**

<b>Properties of Shape</b>	<b>Properties of Shape</b>	<b>Properties of Shape</b>	<b>Properties of Shape</b>	<b>Properties of Shape</b>	<b>Properties of Shape</b>
Shape, pattern, flat, curved, straight, round, hollow, solid, sort, make, build, draw, size, bigger, larger, smaller, <b>Symmetry</b> , symmetrical, <b>symmetrical pattern</b> , pattern, repeating pattern, match	Shape, pattern, flat, curved, straight, round, hollow, solid, sort, make, build, draw, <b>surface</b> , size, bigger, larger, smaller, Symmetry, symmetrical, symmetrical pattern, <b>line symmetry</b> , pattern, repeating pattern, match	Shape, pattern, flat, curved, straight, round, hollow, solid, sort, make, build, draw, <b>perimeter</b> , surface, size, bigger, larger, smaller, Symmetry, symmetrical, symmetrical pattern, line symmetry, pattern, repeating pattern, match	Shape, pattern, flat, curved, straight, round, hollow, solid, sort, make, build, <b>construct</b> , draw, <b>sketch</b> , perimeter, <b>centre</b> , surface, <b>angle</b> , <b>right-angled</b> , <b>base</b> , <b>square-based</b> , size, bigger, larger, smaller, Symmetry, symmetrical, symmetrical pattern, line symmetry, <b>reflect</b> , <b>reflection</b> , pattern, repeating pattern, match, <b>regular</b> , <b>irregular</b>	Shape, pattern, flat, curved, straight, round, hollow, solid, sort, make, build, construct, draw, sketch, perimeter, centre, <b>radius</b> , <b>diameter</b> , surface, angle, right-angled, <b>congruent</b> , base, square-based, size, bigger, larger, smaller, Symmetry, symmetrical, symmetrical pattern, line symmetry, reflect, reflection, <b>axis of symmetry</b> , <b>reflective symmetry</b> , pattern, repeating pattern, match, regular, irregular	Shape, pattern, flat, curved, straight, round, hollow, solid, sort, make, build, construct, draw, sketch, perimeter, centre, radius, diameter, <b>circumference</b> , <b>concentric</b> , <b>arc</b> , <b>net</b> , <b>open</b> , <b>closed</b> , surface, angle, right-angled, congruent, <b>intersecting</b> , <b>intersection</b> , <b>plane</b> , base, square-based, size, bigger, larger, smaller, Symmetry, symmetrical, symmetrical pattern, line symmetry, reflect, reflection, axis of symmetry, reflective symmetry, pattern,

					repeating pattern, match, regular, irregular
<b>2-D shape</b>	<b>2-D shape</b>	<b>2-D shape</b>	<b>2-D shape</b>	<b>2-D shape</b>	<b>2-D shape</b>
Corner, side, <b>point</b> , <b>pointed</b> , rectangle (including square), circle, triangle	Corner, side, point, pointed, rectangle (including square), <b>rectangular</b> , circle, <b>circular</b> , triangle, <b>triangular</b> , <b>pentagon</b> , <b>hexagon</b> , <b>octagon</b>	Corner, side, point, pointed, rectangle (including square), rectangular, circle, circular, triangle, triangular, pentagon, <b>pentagonal</b> , hexagon, <b>hexagonal</b> , octagon, <b>octagonal</b> , <b>quadrilateral</b> , <b>right-angled</b> , <b>parallel</b> , <b>perpendicular</b>	<b>2-D, two-dimensional</b> , Corner, side, point, pointed, rectangle (including square), rectangular, <b>oblong</b> , <b>rectilinear</b> , circle, circular, triangle, triangular, <b>equilateral</b> <b>triangle</b> , <b>isosceles</b> <b>triangle</b> , <b>scalene</b> <b>triangle</b> , pentagon, pentagonal, hexagon, hexagonal, <b>heptagon</b> , octagon, octagonal, quadrilateral, <b>parallelogram</b> , <b>rhombus</b> , <b>trapezium</b> , <b>polygon</b> , right-angled, parallel, perpendicular	2-D, two-dimensional, Corner, side, point, pointed, rectangle (including square), rectangular, oblong, rectilinear, circle, circular, triangle, triangular, equilateral triangle, isosceles triangle, scalene triangle, pentagon, pentagonal, hexagon, hexagonal, heptagon, octagon, octagonal, quadrilateral, parallelogram, rhombus, trapezium, polygon, right-angled, parallel, perpendicular, <b>x-axis</b> , <b>y-</b> <b>axis</b> , <b>quadrant</b>	2-D, two-dimensional, Corner, side, point, pointed, rectangle (including square), rectangular, oblong, rectilinear, circle, circular, triangle, triangular, equilateral triangle, isosceles triangle, scalene triangle, pentagon, pentagonal, hexagon, hexagonal, heptagon, octagon, octagonal, quadrilateral, parallelogram, rhombus, trapezium, <b>kite</b> , polygon, right-angled, parallel, perpendicular, x-axis, y-axis, quadrant
<b>3-D shape</b>	<b>3-D shape</b>	<b>3-D shape</b>	<b>3-D shape</b>	<b>3-D shape</b>	<b>3-D shape</b>
Face, edge, vertex, vertices, cube, <b>cuboid</b> , pyramid, sphere, cone, <b>cylinder</b>	Face, edge, vertex, vertices, cube, cuboid, pyramid, sphere, cone, cylinder	Face, edge, vertex, vertices, cube, cuboid, pyramid, sphere, <b>hemisphere</b> , cone, cylinder, <b>prism</b> , <b>triangular prism</b>	<b>3-D, three-dimensional</b> , Face, edge, vertex, vertices, cube, cuboid, pyramid, sphere, hemisphere, <b>spherical</b> , cone, cylinder, <b>cylindrical</b> , prism, <b>tetrahedron</b> , <b>polyhedron</b> , triangular prism	3-D, three-dimensional, Face, edge, vertex, vertices, cube, cuboid, pyramid, sphere, hemisphere, spherical, cone, cylinder, cylindrical, prism, tetrahedron, polyhedron, triangular prism, <b>octahedron</b>	3-D, three-dimensional, Face, edge, vertex, vertices, cube, cuboid, pyramid, sphere, hemisphere, spherical, cone, cylinder, cylindrical, prism, tetrahedron, polyhedron, triangular prism, octahedron, <b>Dodecahedron</b> , <b>net</b> , <b>open</b> , <b>closed</b>
<b>Position and direction</b>	<b>Position and direction</b>	<b>Position and direction</b>	<b>Position and direction</b>	<b>Position and direction</b>	<b>Position and direction</b>
Position, over, under, <b>underneath</b> , above,	Position, over, under, underneath, above,	Position, over, under, underneath, above,	Position, over, under, underneath, above,	Position, over, under, underneath, above,	Position, over, under, underneath, above,

<p>below, top, bottom, side, on, in, outside, inside, around, in front, behind, front, back, beside, next to, opposite, apart, between, middle, edge, <b>centre</b>, corner, direction, <b>journey</b>, left, right, up, down, forwards, backwards, sideways, across, next to, close, near, far, along, through, to, from, towards, away from, movement, slide, roll, turn, stretch, bend, whole turn, half turn, <b>quarter turn, three-quarter turn.</b></p>	<p>below, top, bottom, side, on, in, outside, inside, around, in front, behind, front, back, beside, next to, opposite, apart, between, middle, edge, centre, corner, direction, journey, <b>route</b>, left, right, up, down, <b>higher, lower</b>, forwards, backwards, sideways, across, next to, close, near, far, along, through, to, from, towards, away from, <b>clockwise, anticlockwise</b>, movement, slide, roll, turn, stretch, bend, whole turn, half turn, quarter turn, three-quarter turn, <b>right angle, straight line.</b></p>	<p>below, top, bottom, side, on, in, outside, inside, around, in front, behind, front, back, beside, next to, opposite, apart, between, middle, edge, centre, corner, direction, journey, route, left, right, up, down, higher, lower, forwards, backwards, sideways, across, next to, close, near, far, along, through, to, from, towards, away from, clockwise, anticlockwise, <b>compass point, north, south, east, west, N, S, E, W, horizontal, vertical, diagonal</b>, movement, slide, roll, turn, stretch, bend, whole turn, half turn, quarter turn, three-quarter turn, <b>angle ... is a greater/smaller angle than, right angle, acute angle, obtuse angle, straight line.</b></p>	<p>below, top, bottom, side, on, in, outside, inside, around, in front, behind, front, back, beside, next to, opposite, apart, between, middle, edge, centre, corner, direction, journey, route, left, right, up, down, higher, lower, forwards, backwards, sideways, across, next to, close, near, far, along, through, to, from, towards, away from, clockwise, anticlockwise, compass point, north, south, east, west, N, S, E, W, <b>north-east, north-west, south-east, south-west, NE, NW, SE, SW</b>, horizontal, vertical, diagonal, <b>translate, translation</b>, movement, slide, roll, turn, stretch, bend, whole turn, half turn, quarter turn, three-quarter turn, <b>rotate, rotation</b>, angle ... is a greater/smaller angle than, <b>degree</b>, right angle, acute angle, obtuse angle, <b>reflection</b>, straight line, <b>ruler, set square, angle measurer, compass.</b></p>	<p>below, top, bottom, side, on, in, outside, inside, around, in front, behind, front, back, beside, next to, opposite, apart, between, middle, edge, centre, corner, direction, journey, route, left, right, up, down, higher, lower, forwards, backwards, sideways, across, next to, close, near, far, along, through, to, from, towards, away from, clockwise, anticlockwise, compass point, north, south, east, west, N, S, E, W, north-east, north-west, south-east, south-west, NE, NW, SE, SW, horizontal, vertical, diagonal, translate, translation, <b>coordinate</b>, movement, slide, roll, turn, stretch, bend, whole turn, half turn, quarter turn, three-quarter turn, rotate, rotation, angle ... is a greater/smaller angle than, degree, right angle, acute angle, obtuse angle, reflection, straight line, ruler, set square, angle measurer, compass, <b>protractor</b></p>	<p>below, top, bottom, side, on, in, outside, inside, around, in front, behind, front, back, beside, next to, opposite, apart, between, middle, edge, centre, corner, direction, journey, route, left, right, up, down, higher, lower, forwards, backwards, sideways, across, next to, close, near, far, along, through, to, from, towards, away from, clockwise, anticlockwise, compass point, north, south, east, west, N, S, E, W, north-east, north-west, south-east, south-west, NE, NW, SE, SW, horizontal, vertical, diagonal, translate, translation, coordinate, movement, slide, roll, turn, stretch, bend, whole turn, half turn, quarter turn, three-quarter turn, rotate, rotation, angle ... is a greater/smaller angle than, degree, right angle, acute angle, obtuse angle, <b>reflex angle</b>, reflection, straight line, ruler, set square, angle measurer, compass, protractor</p>
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