

Mathematics (Geometry – Properties of Shapes)

Geometry (Properties of Shape) – KS1-KS5			
By the end of KS5 our pupils should know:	Redway Pre-Formal Pathway Encounter → Foundation	Redway Semi-formal Pathway Core → Development	Redway Formal Pathway Enrichment → Enhancement
	The pupil can:	The pupil can:	The pupil can:
Identifying Shapes and Their Properties			
Recognise and name common 2D shapes including rectangles (including squares), circles and triangles [NC Yr1]	- Locates moving stimuli (e.g. track florescent ball or move head to sniff smell) - Accept stimuli for an increasing amount of time e.g. will hold objects or allow feet to be in the foot spa - Turns to objects that are activated but in a place. - Showing curiosity about objects, events, and people - Follow objects that move within the toy e.g., cars down slope - Track an object - Shift attention between different objects/actions - Look for favourite objects when sees them hidden	- Manipulate shapes for purpose e.g., shape sorter - Completes inset puzzles. - Uses own ideas to make models of increasing complexity, selecting blocks needed, solving problems, and visualizing what they need build. - Can match and sort common 2D shapes e.g. circles, squares (regardless of colour, sizes, etc..) - Recognise some common 2-D shapes [standard4] e.g., from a choice of two identify the requested shape. - Use basic 2D shapes to make simple pictures	- Recognise common 2D shapes [standard 4] 1. Rectangles 2. Squares 3. Circles 4. Triangles - Names 2D shapes 1. Rectangles 2. Squares 3. Circles 4. Triangles - Correctly describes 2D shapes as flat shapes
Recognise and name common 3D shapes including cuboids (including cubes),	- Selects preferred object from a mixture of objects - Chooses between two or more motivating toys	- Pupils construct with 3D shapes in play - Shows interest in shape by sustained construction activity or by talking about shape arrangements - Recognises common 3D shapes (from a selection)	- Recognise common 3D shapes 1. Spheres 2. Pyramids 3. Cones 4. Cuboids 5. Cubes

pyramids and spheres [NC Yr1]	- Manipulates objects purposefully e.g., empty and fill containers, stacking and building blocks) - Persist in making simple toys do something e.g., keep swiping a wobble toy, or pressing a switch to keep the toy active - Operates a toy that requires a single action e.g., switch for bubble tube - Press buttons to make a toy work e.g., musical toy, instrument - Uses familiar objects according to their function e.g., selecting a spoon to eat with - Uses toys that can be pulled apart and put back together again - Explores differently sized and shaped objects - Stacks objects using flat surfaces - Responds to change of shape - Climbs and squeezes themselves into different types of spaces. - Open containers to find objects (e.g. lift lid, press buttons, pull top off) - Put objects inside others and take them out again. - Combine objects like stacking blocks and cups. - Begins to put objects of similar shape inside others and takes them out again	- Name some common 3-D shapes from a group of shapes. - Make simple constructions e.g., make a house, make a car (could be junk modelling)	- Names 3D shapes 1. Spheres 2. Pyramids 3. Cones 4. Cuboids 5. Cubes - Correctly describes 3D shapes as solid shapes
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	- Use early problem solving for a familiar event (e.g., selecting a car or ball to roll down the slope rather than a piece of material or paper) - Explore 3D shapes with purpose e.g., purposefully tapping a tube or a box, rolling ball.		
Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line [NC Yr2]		- Can count from 1-4 (link to number) - Understand what side means e.g., point to a side - Has some understanding of length (link to measure) e.g., be able to point to a long side and a short side - Explore symmetry by folding shapes e.g. making butterflies, or folding up a square - Run finger or hand around the edge of the shapes - Be able to point to the corner of a shape	- Describe properties of 2D shapes including 1. Rectangles a. Has 4 sides, b. 2 short sides, 2 long sides c. Has 4 corners, d. Has 2 lines of symmetry 2. Squares a. Has 4 sides, b. 4 equal sides c. Has 4 corners, d. Has 4 lines of symmetry 3. Circles a. Has 1 sides, b. Has 0 corners, c. Has unlimited lines of symmetry 4. Equilateral Triangles a. Has 3 sides, b. 3 equal sides c. Has 3 corners,
Identify and describe the properties of 3-D		- Select shapes appropriately e.g. triangular prism for a roof rather than a sphere	- Describe properties of 3D including: 1. Spheres a. Has 1 face

shapes, including the number of edges, vertices and faces [NC Yr2]		- Has some understanding of 'faces' and can point to the face on a 3D shape - Has some understanding of 'vertices' and can point to the vertex on a 3D shape - Has some understanding of 'edges' and can point to the edge on a 3D shape - Run hands over the shape to explore properties - Run hands over the shape to explore properties and attempts to name the object	b. Has 0 vertices c. Has 0 edges 2. Pyramids a. Has 5 faces b. Has 5 vertices c. Has 8 edges 3. Cones a. Has 2 faces b. Has 0 vertices c. Has 1 edge 4. Cuboids a. Has 6 faces b. Has 8 vertices c. Has 12 edges 5. Cylinder a. Has 3 faces b. Has 0 vertices c. Has 2 edges 6. Cubes a. Has 6 faces b. 12 edges c. 8 vertices 7. Triangular Prism a. Has 5 faces b. Has 6 vertices c. Has 9 edges - Identify 3D shapes in picture from
Identify 2-D shapes on the surface of 3-D		- Enjoys composing and decomposing shapes, learning which shapes combine to make shapes e.g. using Polydrons	- Know that 3D shapes can be made up of 2D shapes

shapes, [for example, a circle on a cylinder and a triangle on a pyramid] [NC Yr2]			- What different 2D shapes and how many are needed to make 3D shapes e.g. pyramid is 1 square and 4 triangles - Identifies 2-D shapes on the surface of 3-D shapes.
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 [NC Yr3]			- Can draw 2D shape - Can draw a 2D shape with a ruler to ensure straight lines - Can draw a 2D shape with a ruler to ensure accurate length - Can make 3D shape out of modelling materials - Can identify curved and flat faces and edges on a 3D shape - Can recognise 3-D shapes in different orientations - Can describe the shape using mathematical language
Comparing and Classifying			
Compare and sort common 2-D and 3-D shapes and everyday objects. [NC Yr2]		- Understand the concept of different - Understand the concept of same - To demonstrate they know the difference between a 2D and 3D shape	- Compare 2D and 3D shapes by saying what is the same and what is different - Sort by a given criteria e.g. number of sides or vertices - Names 2-D shapes within everyday objects e.g. plate is a circle - Names 3-D shapes within everyday objects e.g. tin is a cylinder
Angles			

Recognise angles as a property of shape or a description of a turn [NC Yr3]			- Knows that an angle is a measurement of a turn - Can turn/indicate clockwise when asked - Can turn/indicate anticlockwise when asked - Can use the term clockwise to describe a turn - Can use the term anti-clockwise to describe a turn - Knows that an angle is measured in degrees e.g., half a turn = 180°
Identify right angles, recognise that two right 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. [NC Yr3]			- Can identify right angles - Knows that 1 right angle is a quarter of a turn - Knows that 2 right angles are half a turn - Knows that 3 right angles are $\frac{3}{4}$ of a turn - Knows that 4 right angles is a complete turn - Identify angles greater than a right angle - Identify angles less than a right angle
Identify horizontal and vertical lines and pairs of perpendicular			- Can identify horizontal lines in 2D and 3D shapes, drawings and real-life - Can identify vertical lines in 2D and 3D shapes, drawings and real-life

and parallel lines. [NC Yr3]			- Uses terms 'vertical lines' and 'horizontal lines' to describe properties of 2D/ 3D shapes - Can identify a pair of parallel lines - Understands a pair of parallel lines will never meet regardless of how long they are - Can identify a pair of perpendicular lines - Understands that when lines perpendicular lines, one is 90° to the other (forming a right angle)
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