

KS3 Maths
Geometry- Shape

<p>Subject curriculum intent:</p>	<p>We want our students to be able to develop shape knowledge and skills, using them to build problem solving and pattern spotting skills. Depending on the cognitive ability of the student, our intention is that students are able to recognise 2D and 3D shapes in the environment. Students will also begin to use and apply their understanding of measure and perimeter, using resources to begin to measure shapes. We want our pupils to...</p> <ol style="list-style-type: none"> 1. develop fluency in the fundamentals of mathematics so that they are efficient in using and selecting the appropriate strategies to use geometry skills including mental methods, underpinned by mathematical concepts 2. can solve problems by applying their mathematics to a variety of problems with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios 3. can reason mathematically by following a line of enquiry and develop and present a justification, argument or proof using mathematical language. <p>In all math lessons, teachers plan engaging lessons with the aim that pupils:</p> <ul style="list-style-type: none"> • master skills in maths which they are then able to apply to a range of contexts within the school and home context • embed their new skills and understanding to a range of contexts; thus supporting application and progress in learning • acquire core mathematical skills to support their independence as they progress through the school • are able to apply their understanding; supporting them in other areas of the curriculum 	
<p>End of KS3 intent/outcome</p> <p>Students will be confident in naming and identifying 2D and 3D shapes. Students will begin to recognise the properties of 2D and 3D shapes as well as being able to sort shapes based on colours and properties. Students will use shapes to present and spot patterns. Students will begin to use their understanding of using measuring tools, to measure the perimeter of shapes.</p>	<p>End of KS4 intent/outcome</p> <p>Students will continue to build on their learning from key stage 3. Students will be able to name 2D and 3D shapes by sight. Students will be able to walk round a familiar environment to find the shapes that they have been learning about. Students will become more confident in using nets to recognise 3D shapes. Students will begin to develop more problem solving skills linked to shape and perimeter.</p>	<p>End of KS5 intent/outcome</p> <p>Students will continue to develop their geometry and measurement skills. Students will develop their independent skills by using their understanding of measurement to measure the perimeter shapes in centimetres. Students will then be able to use their independence skills to recognise the shapes and sizes of items that they use every day. E.g. planning furniture in their bedroom, sizes of clothing etc</p>
<p>Intent for this topic:</p>	<p>This half term, pupils will develop their understanding of shape, starting from their last learning point. Pupils will develop an understanding of 2D and when ready, 3D shapes. Students will be able to recognise properties of shapes and will be able to identify a shape based on given properties. Students will be able to recognise shapes in their familiar environments and will recognise shapes that</p>	

they see and use every day. Students will begin to measure sides/edges of shapes using a variety of methods of measuring, such as cubes or rulers. Students will also be able to recognise and complete patterns based on shapes and their colours.

Key vocabulary taught within this topic: Square, circle, triangle, rectangle, oval, pentagon, octagon, cube, sphere, cone, cylinder, cuboid, 2D, 3D, sides, corners, edges, faces, properties, sorting, perimeter.

Links to other subjects:

- PE- Gymnastics- shapes
- PSHCE- Similarities and differences

	B2 P 5	B2 P 6-8	B2 step 1c-1b	B2Step 1b-2c	B2Step 2c-2a	B2Step 2a-3a
<p>Subject specific knowledge</p> <p>What do pupils need to know?</p>	<p><u>To know</u> to pick up and look at a range of shapes available</p> <p><u>To know</u> to feel the whole shape</p> <p><u>To know</u> shapes go onto the peg board</p>	<p><u>To know</u> that the shape is the same even when it is a different colour/size from the original</p> <p><u>To know</u> the shape is the same even when it is turned</p> <p><u>To know</u> a triangle by their three representations (do not need to know mathematical names - just that they are all triangles)</p> <p><u>To know</u> the name of 2D shapes: circle, square, rectangle, triangle and oval</p>	<p><u>To know</u> size, colour and position do not alter the name of the shape</p> <p><u>To know</u> the word 'dimensional'</p> <p><u>To know</u> what a shape or 2D or 3D</p> <p><u>To know</u> 3D shapes: sphere, cuboid, cube and pyramid.</p>	<p><u>To know</u> and name 3D shapes: sphere, cuboid, cube and pyramid.</p> <p><u>To know</u> which shapes are 3D without visuals</p>	<p><u>To know</u> properties of all 2D shapes</p> <p><u>To know</u> where lines of symmetry are for 2D shapes</p> <p><u>To know</u> properties of all 3D shapes</p>	<p><u>To know</u> to use a ruler to draw shapes</p> <p><u>To know</u> what a right angle is</p> <p><u>To know</u> angles: acute and obtuse</p>
<p>Subject specific skills</p>	<p><u>Is able to</u> experience and handle different shapes</p>	<p><u>Is able to</u> find physical shapes that are the same.</p>	<p><u>Is able to</u> find 2d shapes in their environment</p>	<p><u>To be able to</u> relate images to 3D shapes</p>	<p><u>Is able to</u> identify and find properties of 2d shapes; including</p>	<p><u>Is able to</u> draw 2d shapes accurately</p>

<p>What do pupils need to be able to do?</p>	<p><u>Is able to</u> place a shape inside a suitable space (e.g. Numicon on a pegboard)</p> <p><u>Is able to</u> make marks using a shape on a page (printing)</p>	<p><u>Is able to</u> experience drawing around a shape</p> <p><u>Is able to</u> name 2D shapes: Rectangles, squares, circles, triangles and ovals (P8)</p> <p><u>Is able to</u> count number of sides on simple shapes</p>	<p><u>Is able to</u> separate 2d and 3d shapes</p> <p><u>Is beginning to</u> recognise and name 3D shapes: sphere, cuboid, cube and pyramid.</p>	<p><u>Is able to</u> name 3D shapes from a picture or symbol alone</p> <p><u>Is able to</u> compare and sort common 2d and 3d shapes and every day objects</p>	<p>sides and line of symmetry</p> <p><u>Is able to</u> identify and describe 3d shapes; including edges, vertices and faces</p> <p><u>Is able to</u> identify 2d shapes on the faces of 3d shapes</p>	<p><u>Is able to</u> create 3d shapes using pliable material</p> <p><u>Is able to</u> describe 3d shapes</p> <p><u>Is able to</u> identify right angles in shapes</p> <p><u>Is able to</u> be able to identify horizontal and vertical lines and pairs of perpendicular and parallel lines</p>
<p><u>Suggested teaching activities</u></p> <p>How could I teach this?</p>	<ul style="list-style-type: none"> Placing shapes in a hole Numicon on peg boards - finding space available Pattern printing using shapes Sensory shape in foam/sand Fit balls into suction tube <p>Continue a single colour pattern e.g. green, green, green, green</p>	<ul style="list-style-type: none"> Shape snap Sensory shape in the bag Take photos of different shapes Drawing around shape Continue a pattern of two using coloured balls up tube or shape blocks Match shapes in the room that are different colours / sizes 	<ul style="list-style-type: none"> Describing shape in the bag/behind back to a partner game Take photos of different shapes in the environment Shape snap Locate a shape in the soft play area Continue a pattern of up to 4 using coloured balls in suction tubes of shape blocks 	<ul style="list-style-type: none"> Print using 3d shapes - finding shape of faces Describe hidden shape to a partner - communication skills link Find and name 3d shapes in soft play area 	<ul style="list-style-type: none"> Describing games Build with 3d shapes - link with DT Construct 3d shapes - link with DT Find right angles in the environment using card template (can be on raised beds in play area) Dance routine using angled turns <p>Follow a map using turn and angles - link with P.E (orienteeing and geog)</p>	

		<ul style="list-style-type: none">• Using concrete 2D shapes• Staistics link - sorting shapes			
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