



MATHS MEDIUM TERM PLANNING

Year 2 – Properties of Shape (Approximately 3 weeks)	
Objectives from Progression Document	<p>recognise and name quadrilaterals, pentagons, hexagons, octagons</p> <p>describe the number of sides of shapes met so far</p> <p>identify any line symmetry in a vertical line for shapes met so far</p> <p>compare and sort common 2-D shapes and everyday objects</p> <p>recognise and name cuboids, cylinders, other prisms and cones</p> <p>describe the number of edges, vertices and faces</p> <p>identify 2-D shapes on the surface of 3-D shapes, e.g. a circle on a cylinder and a triangle on a pyramid</p> <p>compare and sort common 3-D shapes and everyday objects</p>
Previous Learning	<p>recognise and name rectangles (including squares), circles and triangles</p> <p>recognise and name cubes, pyramids and spheres</p> <p>identify that circles are round, but really spheres are spherical</p>
Vocabulary	<p>symmetrical, line of symmetry, fold, match, mirror line, reflection</p> <p>corner (point, pointed), face, side, edge, surface</p>
Key fact(s)	<p>To know the names of a range of 2D and 3D shapes</p> <p>To know that a vertex is a corner where edges meet; that vertices are more than one corner (where edges meet)</p> <p>To know that vertical is a line which runs up and down a page or shape, from top to bottom</p> <p>To know that a curved surface is different to a face</p> <p>To know that an edge is where faces meet.</p> <p>To know that a side is a line that joins 2 vertices</p> <p>To know that a face is a flat surface on a 3D shape</p>
Number facts for fluency	<p>Count in steps of 10 from any number</p> <p>Make ten and then – subtraction (11-2, 11-3, 11-4, 11-5, 11-6, 11-7, 11-8, 11-9; 12-3, 12-4, 12-5, 12-7, 12-8, 12-9; 13-4, 13-5, 13-6, 13-7, 13-8, 13-9; 14-5, 14-6, 14-8, 14-9; 15-6, 15-7, 15-8, 15-9; 16-7, 16-9; 17-8, 17-9)</p>
DfE Ready to Progress Guidance Pages https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/897806/Maths_guidance_KS_1_and_2.pdf	2G-1 Describe and compare 2D and 3D shapes pages 35 – 38
NCETM Ready to Progress Exemplification https://www.ncetm.org.uk/classroom-resources/exemplification-of-ready-to-progress-criteria/	2 – G1 Describe and compare 2d and 3d shapes
Problem Solving and Reasoning Skills Objectives	<p>record work and results in lists and simple tables</p> <p>use a simple Venn diagram (two overlapping circles) to sort objects into three groups – x; y; and both x and y</p>
Pre-assessment:	Year one – simple properties of 2D and 3D shapes


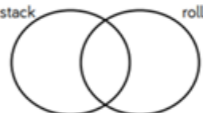





Sequence of Learning

White Rose Small Steps	Learning Intention	Key Questions	Sentence Stems	Comments	Problem-solving links	Extension and Greater Depth opportunities
Recognise 2-D and 3-D shapes (2G 1)	To identify specific 2-D and 3-D shapes	What is the difference between a 2-D and a 3-D shape? What is the name of this shape? How do you know? Does a _____ always look the same? Can you think of some examples? What 2-D shapes can you see on this 3-D shape? How do you know that this shape is _____? Which shape is the odd one out? How do you know?	This shape is a _____ because ... A _____ is a 2-D shape. A _____ is a 3-D shape.	Children should be able to recognise both standard and nonstandard representations of 2-D and 3-D shapes. For example, they should notice that there is no such thing as an 'upside down triangle'; instead, it is just a triangle in a different orientation. Children may call 3-D shapes by the names of the faces, for example calling a cube a square. Children may not be able to differentiate between 2-D and 3-D shapes, particularly when looking at an image.	Shapely Lines (maths.org) Identifying shapes by the number of sides. Inside Triangles (maths.org) Drawing triangles on dotted paper.	<p>Use 15 lolly sticks to make three shapes. Draw your shapes.</p> <p>Did your partner make the same shapes? What happens if you use more or fewer lolly sticks?</p> <p>Annie is drawing a 2D shape. My shape has 5 vertices. Draw Annie's shape.</p> <p>Is there more than one answer?</p> <p>Mo makes a rectangle using the sticks. How many identical rectangles could he make with 18 sticks? Make your own rectangle. How many sticks did you use? Is your rectangle the same as your friend's?</p> <p>Jack has created a pattern using shapes. How many vertices does each step in the pattern have? What do you notice? Can you predict how many vertices the next step in the pattern will have? Is there more than one way to continue the pattern? Can you create your own pattern and explore how the vertices change? Cut a square piece of paper as shown. Rearrange the pieces to make different shapes. What different shapes can you make?</p>
Count sides on 2-D shapes (2G 1)	To describe a 2-D shape by giving the number of its sides	What is a side? How can you count the sides of a shape accurately? How many sides does a have? Does a shape with sides always look the same? Can you think of some examples? What is the name of a shape with sides? How many triangles/ squares/pentagons can you make with 15 lolly sticks?	A triangle has _____ straight sides. A _____ has _____ straight sides. I know I have counted all the sides because ... I know this shape is a _____ because ...	Children may believe that all 4-sided shapes look the same. They may not be accurate when counting the sides, so encourage them to develop strategies such as marking sides as they count them		
Count vertices on 2-D shapes (2G 1)	To describe a shape by giving the number of its vertices	What is a vertex? How can you count the vertices of a shape accurately? How many vertices does a have? Does a shape with vertices always look the same? Can you think of some examples? What is the name of a shape with vertices? How many sides does this shape have? How many vertices does it have? What do you notice?	A square has _____ vertices and _____ sides. A _____ has _____ vertices and _____ sides. The number of vertices a shape has is _____ to the number of sides. I know that I have counted all the vertices because ...	Children may not recognise that a shape has the same number of sides and vertices. Children count vertices of standard and non-standard versions of shapes and use this to identify and name shapes.		
Draw 2-D shapes (2G 1)	To draw a 2-D shape on to a square grid	How can you make the 2-D shape using straws and modelling clay? How can you change your shape to a different one? How can you accurately draw a _____? How do you know you have drawn a _____? Is there more than one way to draw a _____? Can you draw a polygon without a ruler? Why/why not?	To make a _____, I need _____ straws and _____ balls of modelling clay. To draw a _____, I need to draw _____ sides and _____ vertices. I know that I have drawn a _____, because it has _____ sides and _____ vertices	Children begin by using straws and modelling clay to explore how to make shapes before using dotted and squared paper to draw them using a pencil and ruler. When making shapes, children should be encouraged to consider what the straws represent (sides) and what the modelling clay represents (vertices)		
Lines of symmetry	To identify the vertical line of symmetry on 2-D shapes	What does "symmetrical" mean? How do you know if a shape is symmetrical? How can you use a mirror to help you? Is the shape the same on both sides? How do you know that this shape does/does not have a vertical line of symmetry? How can you be accurate when you are drawing a vertical line of symmetry?	This shape is symmetrical because ... I know that this is a line of symmetry because ... A mirror can help me find lines of symmetry because ...	Children may identify other lines of symmetry that are not vertical.	Poly Plug Rectangles (maths.org) Interactive for finding rectangles. Seeing Squares (maths.org) Seeing squares. Interactive game.	
Use lines of symmetry to complete shapes	To complete a shape or picture given one half of it	What does "symmetrical" mean? How could you complete the shape? How do you know if your drawing is symmetrical? How can counting the squares away from the mirror line help you? Why are shapes with diagonal lines more difficult to complete?	The vertex is _____ squares away from the mirror line. I need to count _____ squares away from the mirror line on the opposite side.	Encourage children to plot the vertices first before joining up the shape. Children may not reflect the image, but instead draw the same thing on the other side of the mirror line.		<p>Draw your own problem like this for a partner</p>

		How could marking the vertices and joining them up help you? What mistakes do you think you might make when completing this shape?								
Sort 2-D shapes (2G 1)	To sort 2-D shapes according to their properties	How have you sorted the shapes? How do you know this shape is in the correct group? How can you use the number of sides/vertices to help you? Are there any other ways to sort the shapes? Why/why not? Is this the most useful way to sort the shapes? Why/why not? Why is using a sorting diagram different from sorting into separate groups? What other shape could go in this group? What shape could not go in this group?	I put the ___ in this group because ... The shapes could have been sorted into ___ and ___, because ... ___ belongs/does not belong in this group because ...	They should recognise that the orientation of a shape does not affect its properties. Take time to explore the similarities between squares and rectangles so that children see the connection.		<p>Can you draw more than one four-sided shape that has a vertical line of symmetry?</p> <p>Mo makes a pattern using 4 rectangles, 4 triangles and 4 circles. What could Mo's pattern be? Draw two different possibilities.</p> <p>Draw a shape in each box to make a repeating pattern. You may want to practise on a whiteboard.</p> <p>Which shape is in the wrong set? Explain why.</p> <table border="1" style="display: inline-table;"> <tr> <td>Vertical line of symmetry</td> <td>No vertical line of symmetry</td> </tr> <tr> <td></td> <td></td> </tr> </table> <p>Where should these shapes go in the Venn diagram?</p> <p>Create your own labels and sort the shapes in a different way.</p> <p>Fill in the missing shape to complete the pattern.</p> <p>If the pattern continued what would the tenth shape be? Explain your reasoning.</p> <p>Dora wants to put a sticker on each face of some cubes. She has 60 stickers. How many cubes can she cover in stickers?</p> <p>How many different ways can you arrange these shapes to make a repeating pattern?</p> <p>Do you agree? _____ Why?</p>	Vertical line of symmetry	No vertical line of symmetry		
Vertical line of symmetry	No vertical line of symmetry									
Count faces on 3-D shapes (2G 1)	To describe a 3-D shape by giving the number of its faces	What is a face? What is a curved surface? What is the difference between a face and a curved surface? How can you count the faces of a shape efficiently? What 2-D shapes can you see on this 3-D shape? What 3-D shape do you think these 2-D shapes make? How many faces does a ___ have?	A ___ has ___ faces. A ___ has ___ faces and ___ curved surface. The 2-D shapes that make up the faces of a ___ are ...	Children explore the difference between a face and a curved surface, describing a cylinder as having two faces and one curved surface. Children may mix up faces and curved surfaces. When looking at an image, children may only count the visible faces.	Seeing Squares (maths.org) Good for visualising and justifying ideas.					
Count edges on 3-D shapes (2G 1)	To describe a 3-D shape by giving the number of its edges	What is an edge? How is an edge different from a face? How can you count the edges of a shape efficiently? How can you make sure that you do not miscount the edges? How many edges does a ___ have? Do you think a ___ will have more edges than a ___? Why/why not? Count the edges of these prisms. What patterns can you see?	A ___ has ___ edges. A ___ has ___ faces and ___ edges. A ___ and a ___ have the same number of edges. A ___ has fewer/more edges than a ___	When looking at an image, children may only count the visible edges. When looking at an image, children may mistake the outline for an edge, for example a cylinder having 4 edges	Skeleton Shapes (maths.org) Making 3D shapes with specified amounts of clay and straws.					
Count vertices on 3-D shapes (2G 1)	To describe a 3-D shape by giving the number of its vertices	What is a vertex? What are vertices? How is a vertex different from a face? How is it different from an edge? How can you count the vertices of a shape efficiently? How can you make sure you do not miscount the vertices? How many vertices does a ___ have? Do you think a ___ has more vertices than a ___? Why/why not?	A ___ has ___ vertices. A ___ has ___ vertices, ___ faces and ___ edges. A ___ has the same number of vertices as a ___ A ___ has fewer/more vertices than a ___	Children may believe that all shapes must have at least one vertex. When looking at an image, children may only count the visible vertices.						
Sort 3-D shapes (2G 1)	To sort 3-D shapes according to their properties	How can you sort these shapes? Which group does a ___ go into? How do you know this shape is in the correct group? Which shape is the odd one out? Why do some shapes go into the same groups? Is there another way to sort these shapes? Which other shapes can go into this group?	___ is the odd one out because ... My two groups are ___ and ___ A ___ belongs in ___ I have sorted the shapes by ...	This step is an excellent opportunity to develop reasoning skills. Encourage children to explain fully why they have placed a shape in a certain group.						

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<p>Make patterns with 2-D and 3-D shapes (2G 1)</p>	<p>To continue patterns made from 2-D and 3-D shapes</p>	<p>What shapes can you see in the pattern? Which shapes are repeating? What would be the next shape in the pattern? What would be the shape after that? What would the 10th shape be? Is the pattern repeating or symmetrical? How do you know the next shape is not a ___ ?</p>	<p>The next shape will be a ___ , because ... The shapes that are repeating are ___, ___, ... I know that the 10th shape in the pattern will be a ___ because ...</p>	<p>When drawing patterns, children may stick to ABAB, rather than more complex patterns. Children should be shown both repeating and symmetrical patterns and be able to discuss the differences between these</p>	<div style="border: 1px solid black; padding: 5px;"> <p>Jack is investigating which shapes stack and which shapes roll.</p> <p>He says:</p> <div style="border: 1px solid gray; border-radius: 10px; padding: 5px; display: inline-block;">  <p>Some shapes will stack and roll.</p> </div> <p>Is he correct?</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>stack</p>  </div> <div style="text-align: center;"> <p>roll</p> </div> </div> <p>Sort your shapes using the Venn diagram. Explain what you notice about each set. Do all shapes with flat surfaces stack?</p> </div> <div style="border: 1px solid gray; padding: 5px; margin-top: 10px;"> <p>Using the 3-D shapes:</p> <div style="display: flex; justify-content: center; gap: 10px;">     </div> <ul style="list-style-type: none"> - Make a repeating pattern where there are more cones than cuboids. - Make a repeating pattern where the third shape is always a cylinder. </div> <div style="margin-top: 10px;"> <p>Jack has made a cube using 12 sticks and 8 balls of modelling clay.</p>  <p>What shape could he make with:</p> <p>6 sticks and 4 balls of clay?</p> <p>4 long sticks, 8 short sticks 8 balls of clay?</p> </div>
<p>Post-assessment:</p>		<p>WRH end of block place value assessment – snip as feel appropriate Previous addition and subtraction SATs questions – snip as feel appropriate</p>			