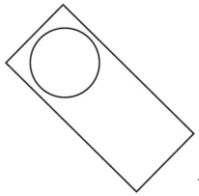
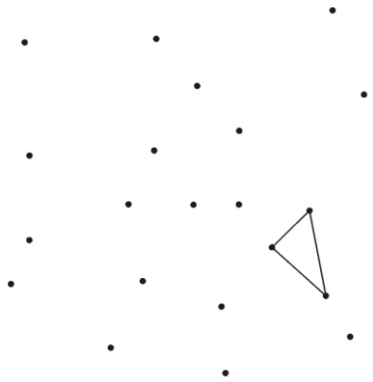
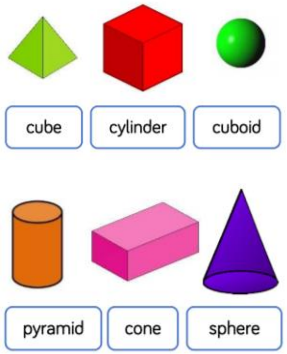
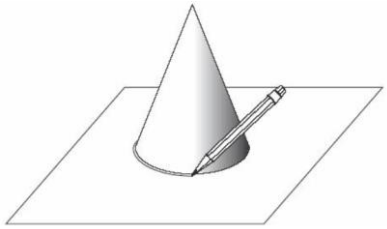
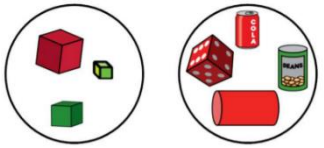
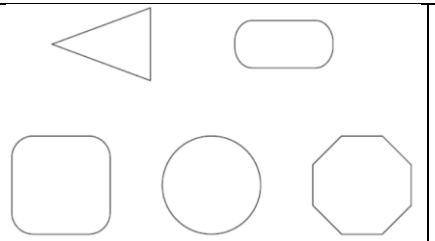
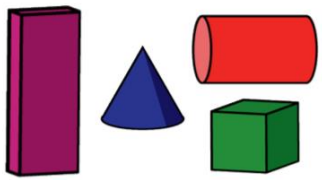
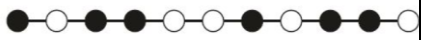
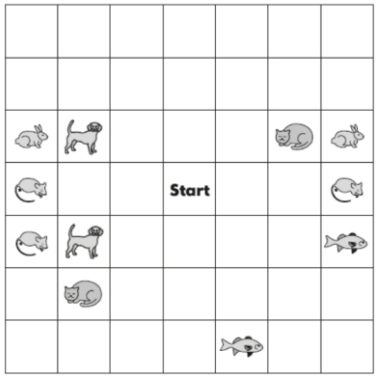
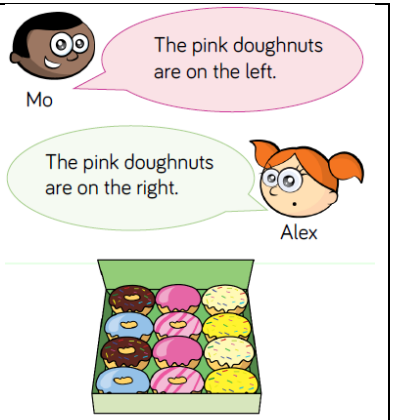
Area of Maths = Shape, Space, Geometry and Position

Declarative knowledge	**Reception**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
SSGP Automatically recall… **Blue highlight = Roche's Specific Expectations** **Red font = Roche's Priorities for Revisiting**	I know what a repeating pattern is. E.g. (AB, ABB and ABBC)	The names of common 2D shapes (rectangles, including squares, triangles and circles) The names of 3D shapes (Cuboids, including cubes, pyramids and spheres)	Identify and describe the properties of 2-D shapes, including the number of sides, and line symmetry in a vertical line. (Introduce pentagons, hexagons, octagons.) Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces. (Introduce prisms.) Identify 2-D shapes on the surface of 3-D shapes. Declare the difference between common 2-D and 3-D shapes and everyday objects.	Angles as a property of shape or a description of a turn. Right angles, recognise that 2 right angles make a half-turn, 3 make three-quarters of a turn and 4 a complete turn; Horizontal, vertical, parallel and perpendicular lines (Definitions = Declarative Know an acute angle is less than a right angle and an obtuse angle is more than a right angle. (Non stat guidance)	Classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes. (6 quadrilaterals + 3 triangles) Identify lines of symmetry in 2-D shapes presented in different orientations. (Dec. = What is a line of symmetry?) Describe positions on a 2-D grid as coordinates in the first quadrant. (Dec. = Know which way around the co-ordinates go. Know and label the X and Y axis.)	Know angles are measured in degrees. (Introduce reflex angles.) Identify: angles at a point and 1 whole turn (total 360°) angles at a point on a straight line and half a turn (total 180°) other multiples of 90°. (Dec. = define the definitions by degrees.) Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.	Name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius. Recognise angles where they meet at a point, are on a straight line, or are vertically opposite. (Introduce – Vertically opposite)

Year 1						
Year group:	**NC L.O.**	**Practical**	**Pictorial**	**Abstract**	**Problem Solving**	**Reasoning**
		Make it! **SAY IT**	**Show it/Draw it!** **SAY IT**	**Read/Write it!** **SAY IT**		
1	[KEY] Recognise and name common 2-D and 3-D shapes, including 2-D shapes [for example, rectangles (including squares), circles and triangles].	2-D shapes from the maths cupboard. 2-D shapes seen in the classroom (Shape hunt).	 Tick the names of the two shapes in this picture. Tick **two**. triangle ☐ square ☐ rectangle ☐ circle ☐ hexagon ☐  Match the 2-D shapes to their correct name.		Join dots to make 2 more triangles. Use a ruler. 	Sarah is thinking of a 2-D shape. Sarah's shape has **four straight** sides. Write down **two shapes** that Sarah could be thinking of.

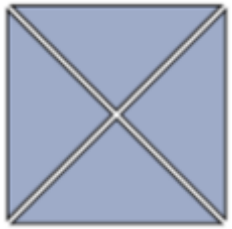
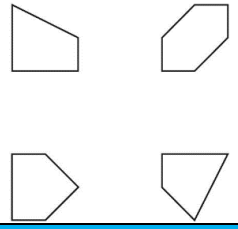
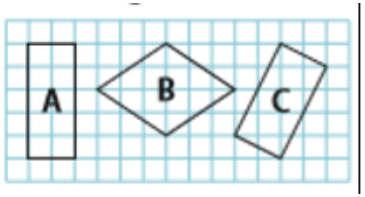
					Here is part of a shape.  How many different ways can you complete the shape using one or more straight lines? Compare yours with a partner. What is the same and what is different?	
2020 Guidance		**1G–1** Recognise common 2D and 3D shapes presented in different orientations, and know that rectangles, triangles, cuboids and pyramids are not always similar to one another. **1G–2** Compose 2D and 3D shapes from smaller shapes to match an example, including manipulating shapes to place them in particular orientations. Year 1 document, pages 35-39				
1	[KEY] Recognise and name common 2-D and 3-D shapes, including 3-D shapes [for example, cuboids (including cubes), pyramids and spheres].	3-D shapes from the maths cupboard. 3-D shapes seen in the classroom (Shape hunt). K'Nex			Fred draws round the bottom of a cone.  Tick (✓) the shape that Fred draws.	Some 3-D shapes have been sorted.  Have they been sorted correctly? Explain how you know. How many ways can you sort the shapes below?

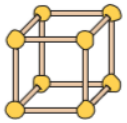
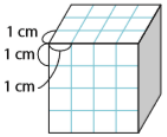
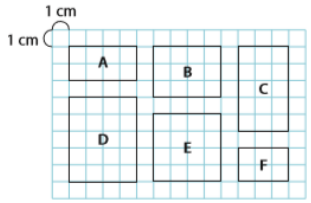
			Match the shapes above with their correct names.			
2020 Guidance		**1G–1** Recognise common 2D and 3D shapes presented in different orientations, and know that rectangles, triangles, cuboids and pyramids are not always similar to one another. **1G–2** Compose 2D and 3D shapes from smaller shapes to match an example, including manipulating shapes to place them in particular orientations. Year 1 document, pages 35-39				

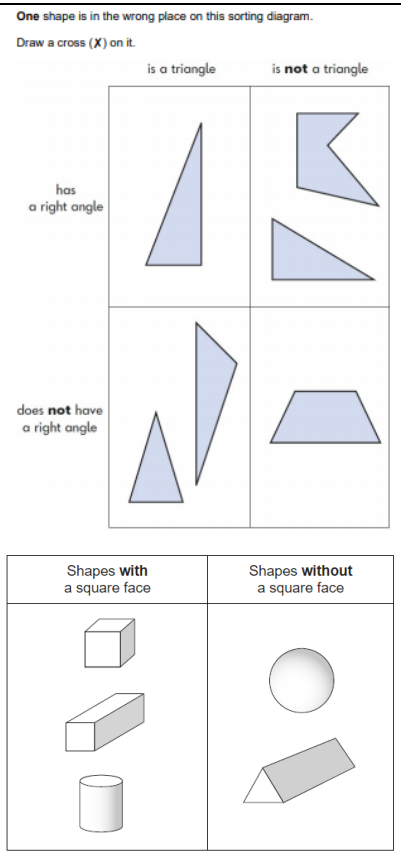
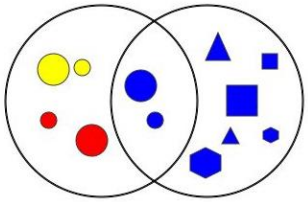
1	Describe position, direction and movement, including whole, half, quarter and three-quarter turns. (Remember ordinal language, first, second, third…)	Bee-bots Walking commands Position in the line	Draw what each shape will look like once it has turned a: •quarter turn clockwise •half turn clockwise •three quarter turn clockwise •full turn clockwise  		Put a tick below the fourth black bead.  Put your finger on Start. Move your finger up 1 square then across 3 squares. Tick (✓) the animal your finger stops on.  Complete the sentences using 'left' and 'right' to describe the position of the coins.  The £1 coin is to the _____ of the 1p coin.	 Who is correct? Explain how you know.

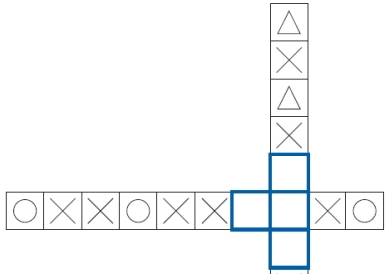
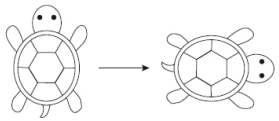
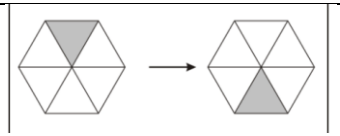
					The 50p coin is to the _____ of the 1p coin. The 2p coin is to the _____ of the 50p coin.	

Year 2

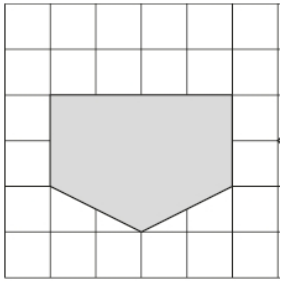
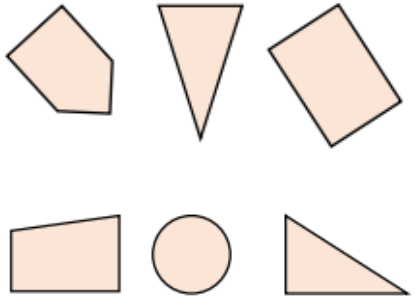
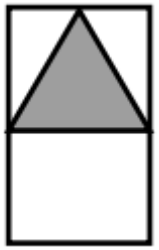
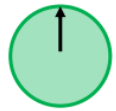
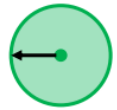
Year group:	NC L.O.	Practical	Pictorial	Abstract	Problem Solving	Reasoning
		Make it! **SAY IT**	**Show it/Draw it!** **SAY IT**	**Read/Write it!** **SAY IT**		
2	[EXS] [KEY] Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line.	2D Shapes (Every day and mathematical) Mirrors Rulers	2D Shapes (Every day and mathematical) Draw a line of symmetry on each shape: 	Questions that do not involve pictorial images: Tick the sentences that are correct: ➢ A square has sides of equal length. ➢ A square has curved sides. ➢ A square has lines of symmetry. ➢ A square has five sides.	Cut a square piece of paper as shown below.  Rearrange the pieces to make different shapes. What shapes can you make? Can you describe their properties? Tick the pentagon: 	How do you know that is a…..? Captain conjecture says: All of these shapes are rectangles because they all have four sides.  Do you agree? Explain your answer.
2020 Guidance	**2G–1** Use precise language to describe the properties of 2D and 3D shapes, and compare shapes by reasoning about similarities and differences in properties. Year 2 document, pages 35-38					

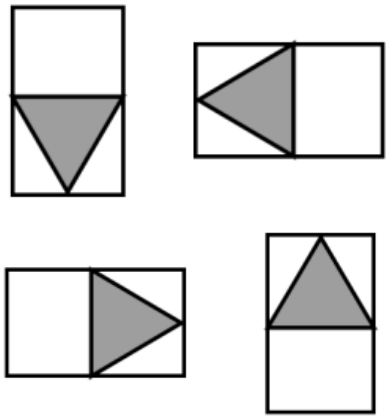
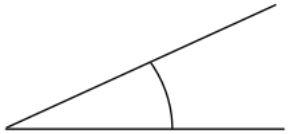
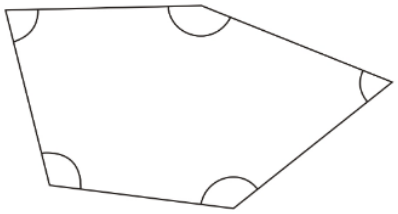
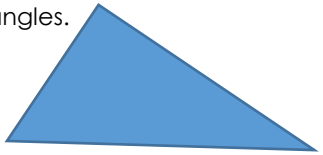
2	[EXS] [KEY] Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces. Identify 2-D shapes on the surface of 3-D shapes [for example, a circle on a cylinder and a triangle on a pyramid].	2D and 3D Shapes (Every day and mathematical)	3D Shapes (Every day and mathematical)	Questions that do not involve pictorial images: **Two** of these sentences are correct. Tick (✓) them. A cube has **curved faces**. A cube has **6 faces**. A cube has **more than 6 corners**. A cube has **fewer than 6 edges**.	**Mastery with Greater Dep** Jack has made a cube using 12 sticks and 8 balls of mod  What shape could he make with: 6 sticks and 4 balls of clay? 4 long sticks, 8 short sticks 8 balls of clay? **Mastery** We are going to make a box as shown.  Which quadrilaterals shown below do we need? How many of each do we need?  	How do you know that is a.....? ★ Which statement is false?  A It has a square base B It has 5 vertices C It has 7 edges How do you know?
2020 Guidance	**2G–1** Use precise language to describe the properties of 2D and 3D shapes, and compare shapes by reasoning about similarities and differences in properties. Year 2 document, pages 35-38					

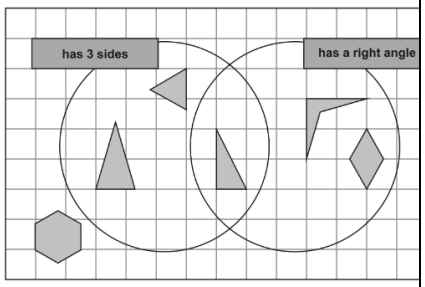
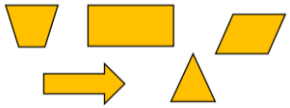
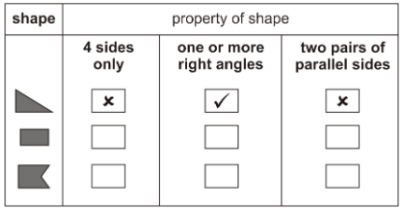
2	Compare and sort common 2-D and 3-D shapes and everyday objects	2D and 3D Shapes (Every day and mathematical) Hoops for Venn Diagrams	2D and 3D Shapes (Every day and mathematical) TESTBASE!		 One shape is in the wrong place. Put a X by it.	 I think I have sorted the shapes correctly, but Mrs Wheeldon thinks the blue circles should be in the blue section. Who is right? Prove it! All objects should be inside the circles on a Venn Diagram. Always true, sometimes true, never true?

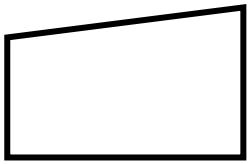
2	Order and arrange combinations of mathematical objects in patterns and sequences.	Mathematical objects – mostly 2D.	Pictures of shapes and mathematical objects.		Here are two shape patterns.  Draw a shape in each empty box to make the patterns complete	Fill in the missing shape to complete the pattern:  Explain how you chose your shape. If the pattern continued what would be the **tenth** shape?
2	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).	Objects to rotate. Beebots. Clocks. (Can do practically in PE.)	Images to rotate.		The turtle is rotated clockwise  How much is the turtle rotated? Circle your answer ➢ Quarter turn ➢ Half tern ➢ Three-quarter turn ➢ Full turn Continue the pattern in the next two circles 	 I think I have rotated this hexagon a quarter turn clockwise. True or False? How do you know? If false how much have I rotated the hexagon? If I rotate an object half a turn clockwise OR anticlockwise it will end up in the same position. Always true, sometimes true, never true?

Year 3

Year group:	NC L.O.	Practical	Pictorial	Abstract	Problem Solving	Reasoning
		Make it! **SAY IT**	**Show it/Draw it!** **SAY IT**	**Read/Write it!** **SAY IT**		
3	[KEY] Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn. Recognise angles as a property of shape or a description of a turn.	Angle hunt, looking for angles around the room. Rulers with right angle corners Beebot turns	Drawing right angles in books. Identifying right angles in shapes. How many right angles does this shape have:  Draw a shape with **four** right angles. Draw a shape with only **one** right angle	A shape has 4 right angles. It has 4 sides which are not all the same length. Write the name of this shape.	Sort the shapes based on the number of right angles they have. Record your answer in a table.  This shape is turned clockwise through one right angle. 	The arrow on a spinner started in this position.  After making a turn it ended in this position.  Jack says,  Alex says,  Who do you agree with?

					Tick the shape that shows how it looks after the turn. 	
2020 Guidance		**3G–1** Recognise right angles as a property of shape or a description of a turn, and identify right angles in 2D shapes presented in different orientations. Year 3 document, pages 61-64				
3	[KEY] Identify whether angles are greater than or less than a right angle. Recognise angles as a property of shape or a description of a turn.	Children can create a 'Right Angle Tester'  And use this to find angles that are less than or greater	This angle is less than a right angle.  It is called an ___ angle. This angle is more than a right angle.		Look at this shape. Tick (✓) each angle that is less than a right angle. 	James says: My triangle has three **acute** angles.  Do you agree with James? Explain why / why not.

		than a right angle Corner of a ruler to check whether angles are greater or less than 90°	 It is called an ___ angle. Draw three acute angles Draw three obtuse angles Draw a **triangle** with three **acute** angles		Here is a diagram for sorting shapes. One of the shapes is in the wrong place. Put a cross (**✗**) on it. 	
3	Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.	2D shapes with parallel and perpendicular lines Objects around the room (tables, doors, pattern of the ceiling)	Tick the two shapes that have exactly one pair of parallel lines.  Complete the sentence to describe the shape below: 	Complete these sentences: A line that runs from left to right across the page is called a _____ line. A line that runs straight up and down the page is called a _____ line. Parallel lines will **always / sometimes / never** meet. Perpendicular lines meet at **acute / obtuse / right** angles.	Complete the table:  shape / property of shape / 4 sides only / one or more right angles / two pairs of parallel sides ✗ ✓ ✗	Sally says: *"The lines below are not parallel."*  Explain how Sally can convince her teacher that she is correct.

			The shape has _____ vertical and _____ horizontal lines.	Draw a letter from the alphabet that has **vertical** lines but no **horizontal** lines. Now draw a shape that has **horizontal** lines but no **vertical** lines. Can you draw a letter that has **both horizontal and vertical lines?**		
2020 Guidance		3G–2 Draw polygons by joining marked points, and **identify parallel and perpendicular sides**. Year 3 document, pages 64-66.				
3	Draw 2-D shapes and make 3-D shapes using modelling materials. Do the 2-D Shape part first so the 3-D links to the next objective.	Rulers K'nex Lego 2-D shapes for drawing around Polydron	Describe this quadrilateral.  It has _____ angles. It has _____ right angle(s). It has _____ obtuse angle(s). It has _____ acute angle(s). It has _____ lines of symmetry.	Draw the following shapes in your book: A square with sides of 4cm A triangle with one obtuse angle A quadrilateral with only **one** pair of parallel lines. A rectangle whose length is double its width.	Draw at least one shape in each section of the diagram. |	At least one right angle	No right angles
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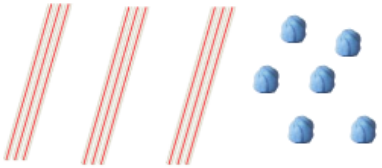
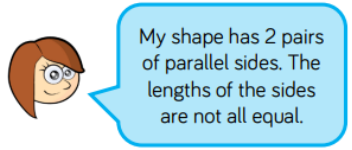
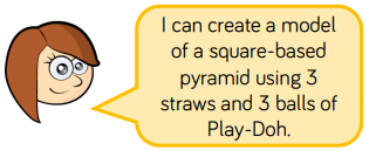
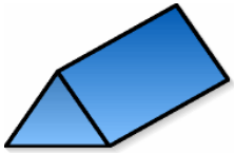
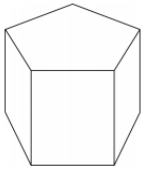
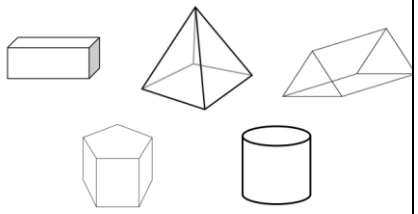
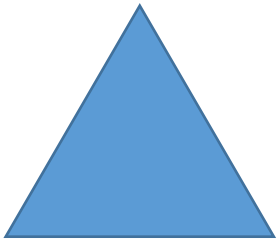
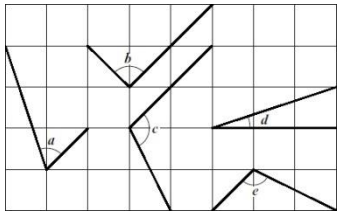
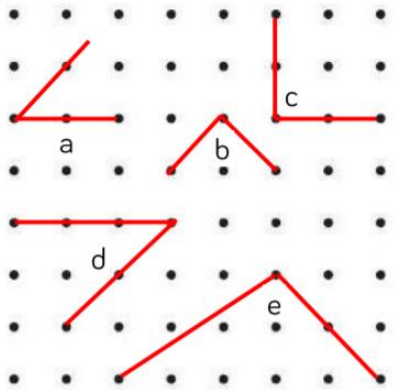
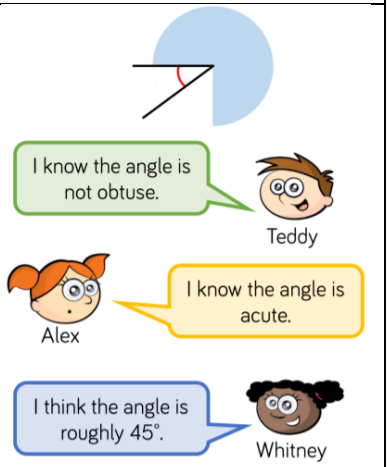
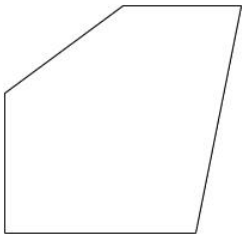
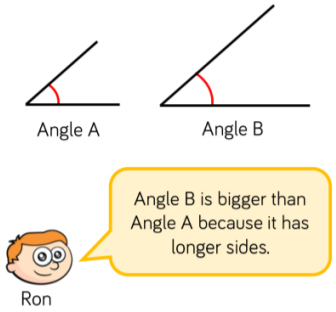
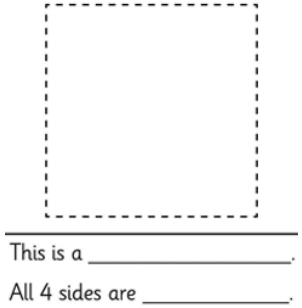
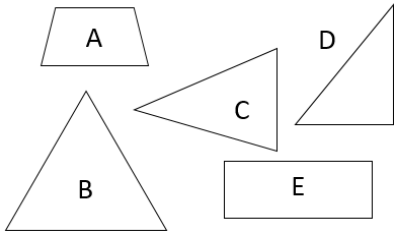
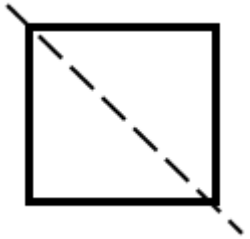
4 sided		
Not 4 sided			 I have 9 straws and 6 balls of Play-Doh.  What 3-D shape can I create using all of	Rosie describes a 2-D shape.  Draw the shape that Rosie is describing. Could this square be Rosie's shape?  Explain why.

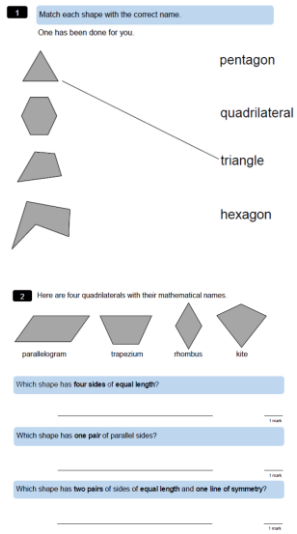
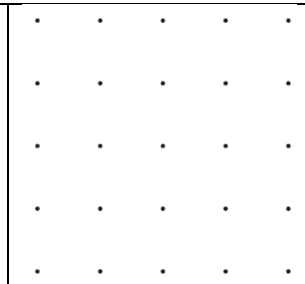
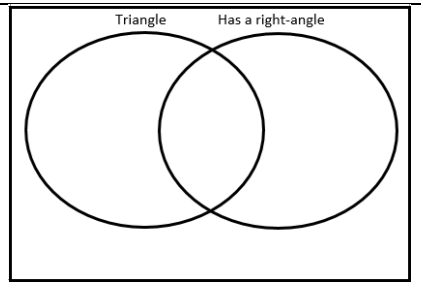
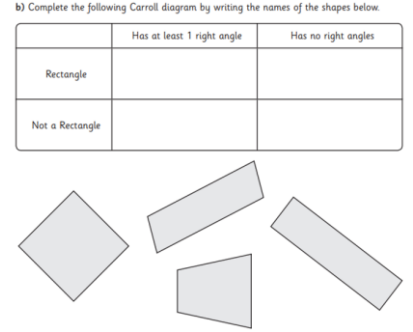
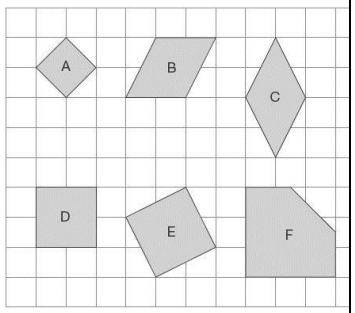
			Draw another shape that has the same properties.		the straws and Play-Doh? Have a go at making it.	Rosie says,  Explain the mistake Rosie has made. How many straws and balls of Play-Doh would you need to create a pyramid?
2020 Guidance		3G–2 **Draw polygons by joining marked points,** and identify parallel and perpendicular sides. Year 3 document, pages 64-66.				

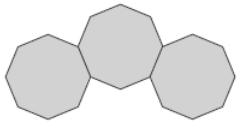
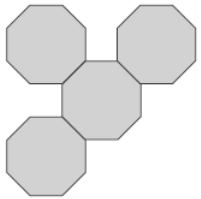
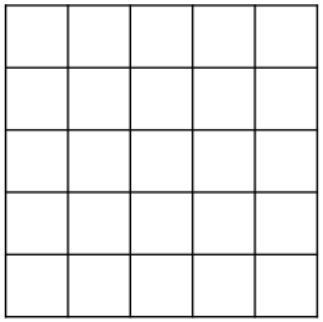
3	Recognise 3-D shapes in different orientations and describe them.	3-D shapes and associated 2-D shapes.	How many faces do these 3-D shapes have?  		Riley is thinking of a 3-D shape. He says, "My shape has five faces. Two faces are triangles and three faces are rectangles." Tick the shape he is thinking about. 	Scarlett is looking at a single face on a 3-D shape:  Scarlett says: Because the face I'm looking at is a triangle the 3-D shape must be a pyramid. Explain why Scarlett is incorrect.

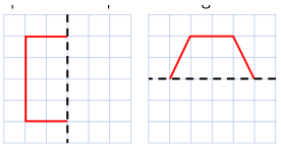
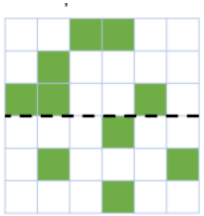
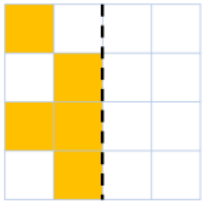
Year 4

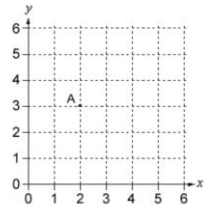
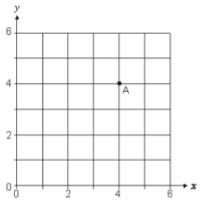
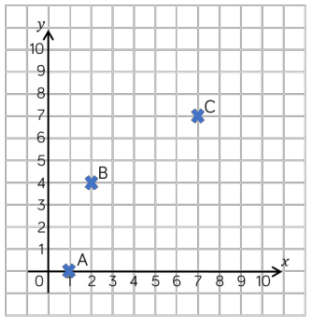
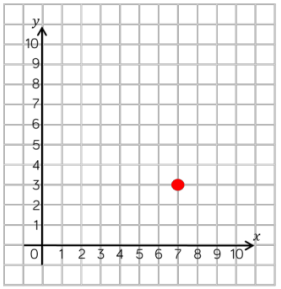
Year group:	NC L.O.	Practical	Pictorial	Abstract	Problem Solving	Reasoning
		Make it! **SAY IT**	**Show it/Draw it!** **SAY IT**	**Read/Write it!** **SAY IT**		
4	Identify acute and obtuse angles and compare and order angles up to two right angles by size.	Rulers 2-D shapes Construction equipment (K'nex to make angles) Angle hunt around the classroom	Place two pieces of masking tape on the desk to make an angle. Now put your ruler along one of the strips in push it to the corner where the strip meets the second strip. Does your second strip go underneath your ruler? If it does you have an **acute** angle. If the second strip does not go behind the ruler you have an **obtuse** angle. If your ruler fits the corner of the two strips perfectly you have a **right-angle.**	Here are five angles marked on a grid of squares.  Write the letters of the angles that are obtuse. Write the letters of the angles that are acute. Look at this shape.	Here are 5 angles on dotted paper:  There are two pairs of the same angle and an odd one out. Can you identify the two pairs and the odd one out?	 Who is correct? Explain your reasons.

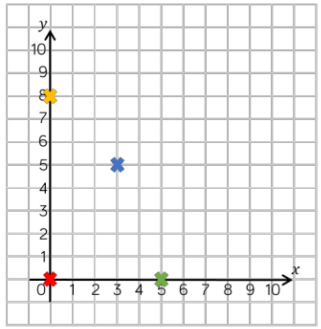
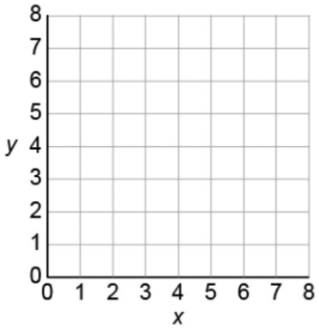
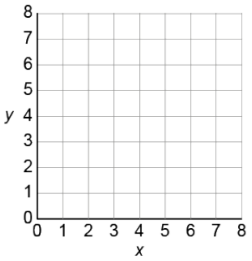
				 Draw a cross in the corner with the smallest angle.		 Do you agree with Ron? Explain your thinking.
4	[KEY] Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes. Suggested order: Triangles, Quads, other regular and irregular polygons, curved shapes.	2-D shapes Construction kits (K'nex, Lego, DM's building kit) Shape hunting around the classroom		Draw and label: A square A rectangle A quadrilateral with only one pair of parallel lines A right-angled triangle An irregular pentagon Join dots on the grid to make a quadrilateral that has 3 acute angles.	Sort the shapes below into the Venn diagram on the right: 	Maisie has a square and cuts it along the dotted line to make two triangles:  Faye says "Maisie has made 2 isosceles triangles"

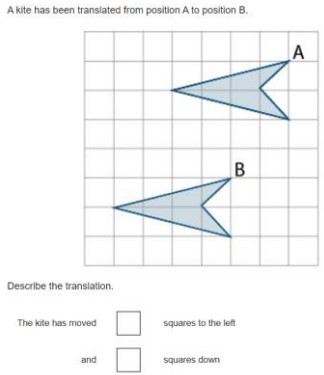
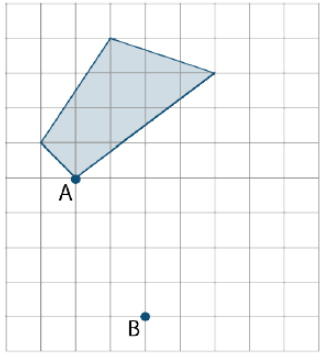
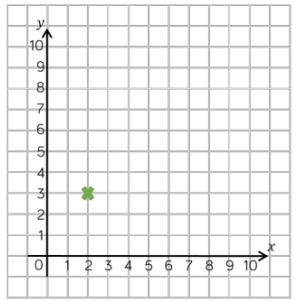
			 This is a _____. It has 1 pair of _____ sides. 		  Here are six shapes on a square grid.  Write the letters of all the shapes that are squares.	Talia says "Maisie has made 2 right-angled triangles" Explain why they are both correct Which of these statements are correct? • A square is a rectangle. • A rectangle is a square. • A rectangle is a parallelogram. • A rhombus is a parallelogram. Explain your reasoning.

2020 Guidance		**4G–2** Identify regular polygons, including equilateral triangles and squares, as those in which the side-lengths are equal and the angles are equal. Find the perimeter of regular and irregular polygons. Year 4 document, pages 63-67.				
4	[KEY] Identify lines of symmetry in 2-D shapes presented in different orientations.	Folding paper shapes Symmetry hunt around the class Mirrors	These diagrams are made from regular octagons. Draw the line of symmetry on each diagram. Use a ruler.  		Sort the shapes into the table. |	1 line of symmetry	More than 1 li of symmetr
---	---	---
Up to 4 sides		
More than 4 sides			  How many symmetrical shapes can you make by colouring in a maximum of 6 squares? 	Always, Sometimes, Never. A four-sided shape has four lines of symmetry.  Jack A triangle has 1 line of symmetry unless you change the orientation. Is Jack correct? Prove it.

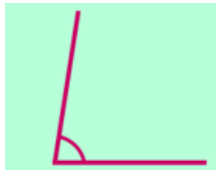
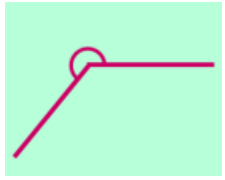
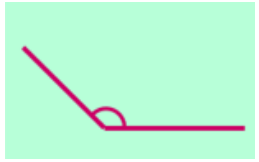
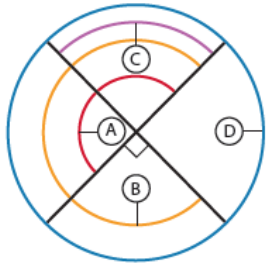
2020 Guidance		**4G-3 Identify line symmetry in 2D shapes presented in different orientations.** Reflect shapes in a line of symmetry and complete a symmetric figure or pattern with respect to a specified line of symmetry. Year 4 document, pages 67-70.				
4	Complete a simple symmetric figure with respect to a specific line of symmetry.	Mirrors Symmetrical figures	Complete these shapes: 		Colour the squares to make the patterns symmetrical:   How many different symmetrical shap can you create using the given sides? 	 Dora When given half of a symmetrical shape I know the original shape will have double the amount of sides. Do you agree with Dora? Convince me.
2020 Guidance		**4G-3** Identify line symmetry in 2D shapes presented in different orientations. **Reflect shapes in a line of symmetry and complete a symmetric figure or pattern with respect to a specified line of symmetry.** Year 4 document, pages 58-62.				

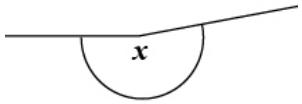
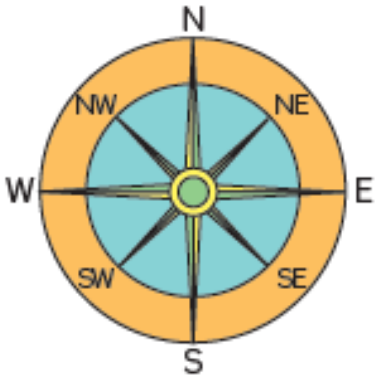
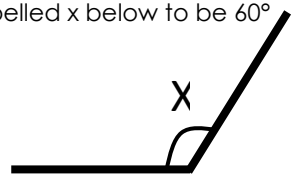
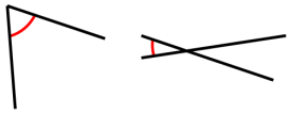
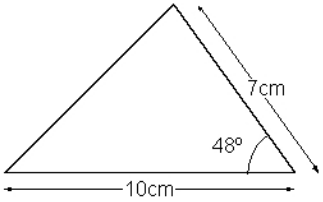
4	Describe positions on a 2-D grid as coordinates in the first quadrant	100 square in playground Peg boards	Co-ordinate grids Co-ordinate ITP https://mathsframe.co.uk/en/resources/resource/79/itp-coordinates	Look at the graph.  The x-coordinate of **A is 2** What is the **y-coordinate** of **A**? Point A is marked on the grid. The coordinates of A are (4, 4).  Mark **one point** on the grid that has: an x coordinate that is **equal to 4**, and a y coordinate that is **greater than 4** Write the coordinates for the points shown. ✖ (__ , __) ✖ (__ , __) ✖ (__ , __) ✖ (__ , __)	 Which clue matches which coordinate? Clue 1 — My x coordinate is half of my y coordinate. Clue 2 — My y coordinate is less than my x coordinate. Clue 3 — Both my coordinates are prime numbers.	 The point is plotted at (7, 3) Teddy Rosie The point is plotted at (3, 7) Who is correct? What mistake has one of the children made?

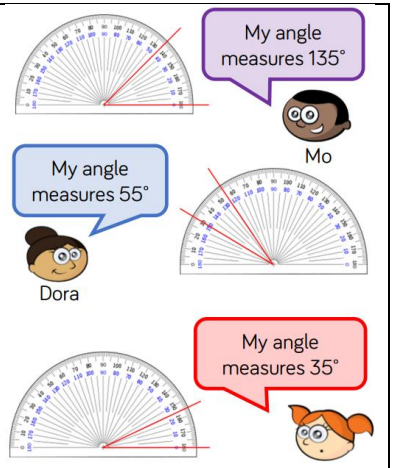
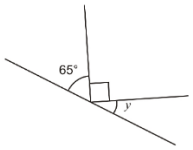
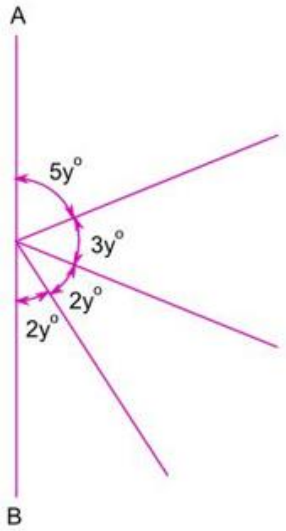
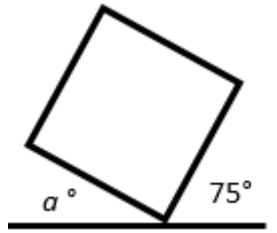
						
4	Plot specified points and draw sides to complete a given polygon	100 square in playground Peg boards	Co-ordinate grids Co-ordinate ITP https://mathsframe.co.uk/en/resources/resource/79/itp-coordinates	Mark the points and join them to make a square. (3,1) (2,4) (5,5) (6,2) Use a ruler. 	Mark the following points, and join them to make a polygon. (5, 0) (3, 1) (5, 2) (7, 1)  What is the name of the polygon that you have drawn?	**Always, Sometimes, Never.** The number of points is equal to the number of vertices when they are joined together.
2020 Guidance		**4G–1 Draw polygons, specified by coordinates in the first quadrant,** and translate within the first quadrant. Year 4 document, pages 58-62				

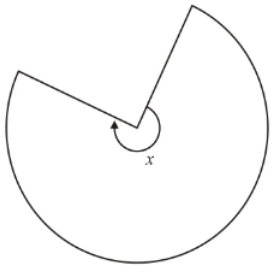
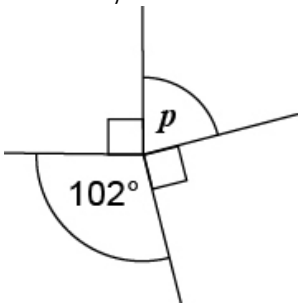
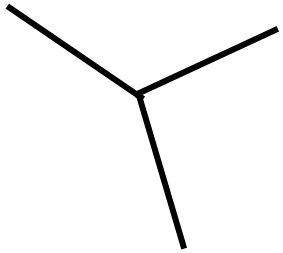
4	Describe movements between positions as translations of a given unit to the left/right and up/down	100 square in playground Peg boards	Co-ordinate grids Co-ordinate ITP https://mathsframe.co.uk/en/resources/resource/79/itp-coordinates	 Translate the quadrilateral so that point A moves to point B. 		  Ron translates the point (2, 3), but realises that it has returned to the same position. What translation did he do? Is there more than one answer?
2020 Guidance	**4G–1** Draw polygons, specified by coordinates in the first quadrant, and **translate within the first quadrant.** Year 4 document, pages 58-62					

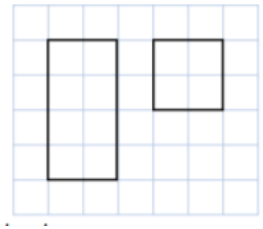
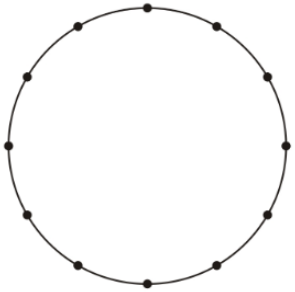
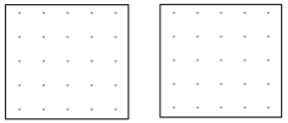
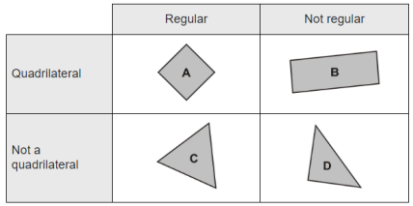
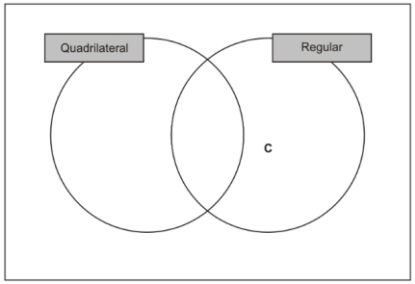
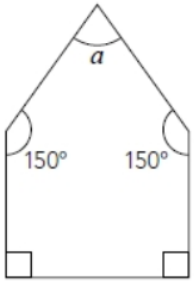
Year 5

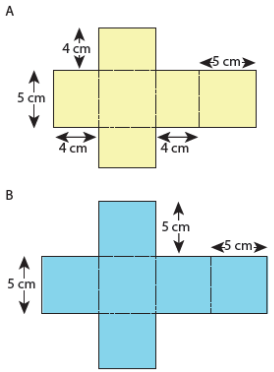
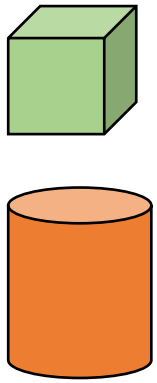
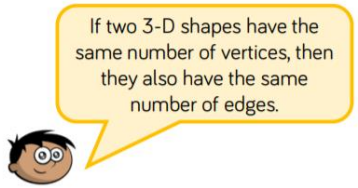
Year group:	NC L.O.	Practical	Pictorial	Abstract	Problem Solving	Reasoning
Objectives running through the unit		Identify other multiples of 90°.				
		Make it! **SAY IT**	**Show it/Draw it!** **SAY IT**	**Read/Write it!** **SAY IT**		
5	Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.	Rulers 2-D shapes Construction equipment (K'nex to make angles) Angle hunt around the classroom	Look at the angles below and write whether they are acute, obtuse, or reflex:   	In your book draw: • A right angle • An acute angle • An obtuse angle • A straight angle (You need a point of measure) • A reflex angle • A revolution	In the questions, below all of Harry's movement is in a clockwise direction. If Harry is facing North and turns through 180 degrees, in which direction will he be facing? If Harry is facing South and turns through 180 degrees, in which direction will he be facing? What do you notice? If Harry is facing North and wants to face SW how many degrees must he turn? From this position how many degrees must he travel through to face North again?	The circle is divided into quarters by the two diameter lines and four angles A, B, C and D are marked.  Are the statements below true or false? • Angle C is the smallest angle. • Angle D is the largest angle. • All the angles are the same size. • Angle B is a right angle.

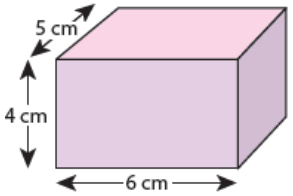
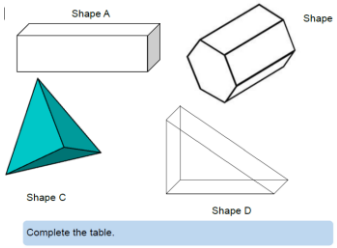
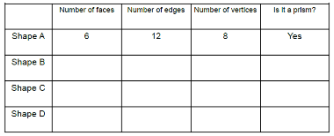
			Estimate the size of angle x  Circle the closest estimate. 170° 310° 190° 260° 180°		 	• Angle B is an obtuse angle. Explain your reasoning. Mr Moore estimates the angle labelled x below to be 60°  Mr Moore cannot be correct because…. Miss Palk says, "You can't draw an obtuse angle and two acute angles on a straight line". Is Miss Palk correct? Prove your answer with a diagram.
2020 Guidance		**5G–1 Compare angles, estimate** and measure **angles in degrees (°)** and draw angles of a given size. Year 5 document, pages 67-70				
5	[KEY] Draw given angles and measure them in degrees (°).	Rulers Protractors	Estimate the size of the angles and then use a protractor to measure them to the nearest degree. How close were your estimates? 	Draw an estimate of the following angles: A. 45° B. 150° C. 178° Now measure your angles. What is the difference between your estimate and measurement?	Here is a sketch of a triangle. It is not drawn to scale.  Draw the full-size triangle accurately, below.	Three children are measuring angles. Can you spot and explain their mistake?

					Use an angle measurer (protractor) and a ruler. One line has been done for you.	
2020 Guidance		5G–1 Compare angles, estimate and **measure angles in degrees (°) and draw angles of a given size**. Year 5 document, pages 67-70				
5	Identify angles at a point on a straight line and a turn (total 180°).	Rulers Protractors	Calculate the size of angle y in this diagram. **Do not** use a protractor (angle measurer). 	There are five angles on a straight line. Two of them are 32° and 43°, and the other three angles are all equal. Prove that the other three angles are 35°	AB is a straight line. What is the value of y? 	Below is a square touching a straight line. Calculate angle a. Explain how you got your answer. 

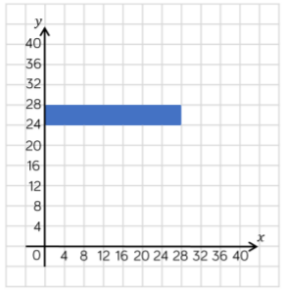
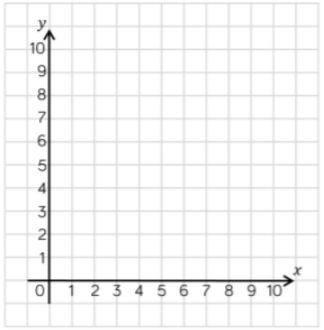
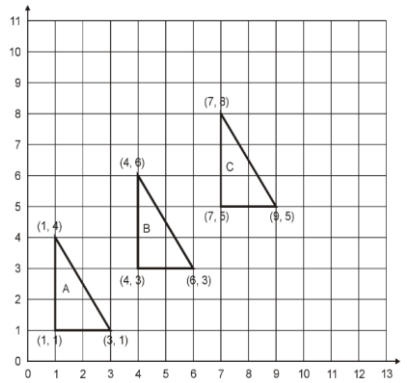
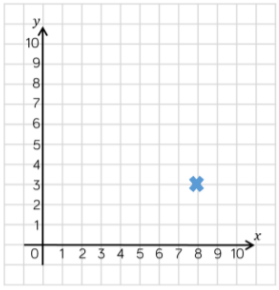
5	Identify angles at a point and one whole turn (total 360°).	Rulers Protractors	This shape is three-quarters of a circle.  How many degrees is angle x?	Complete the sentences: ¼ of a turn = 1 right angle = 90° ½ of a turn = ___ right angles = _____° ____ of a turn = 3 right angles = _____° A full turn = _____ right angles = _____ °	Calculate the size of angle p in the diagram. Do not use a protractor (angle measurer).  	Sam measures all three angles around a single point:  Sam says: I need to **measure all three** angles around the point to find all their values. Do you agree with Sam? Sam measures the angles to be 120°, 187° and 145°. Explain how you know that at least one of Sam's measurements is incorrect.
5	Use the properties of rectangles to deduce related facts and find missing lengths and angles.	Rulers 2-D shapes	Look at the square and the rectangle. What's the same? What's	Draw all the unique rectangles with an area of 20 squares. Draw a rectangle with an area of 24 squares and a perimeter of 22 square-lengths.	The twelve points on this circle are equally spaced. Join four points to make a square. Use a ruler.	Mr Moore is trying to make a tiled rectangle for his bathroom wall. He has 13 square tiles and doesn't want to cut them. Explain why he can only draw one unique rectangle.

	(Lots of this will be covered in measurement)		different? 			
5	[KEY] Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.	Regular and irregular 2-D shapes Identifying irregular shapes in the classroom	Draw a regular polygon and an irregular polygon on the grids. 	Identify the regular and irregular quadrilaterals. 	Here are four shapes in a Carroll diagram.  Use this information to write the letters A, B and D in the Venn diagram below.  	Here is a pentagon:  Not drawn accurately Each side of the pentagon is the same length. Is the shape a regular pentagon? Circle Yes or No. Yes / No Explain your answer.

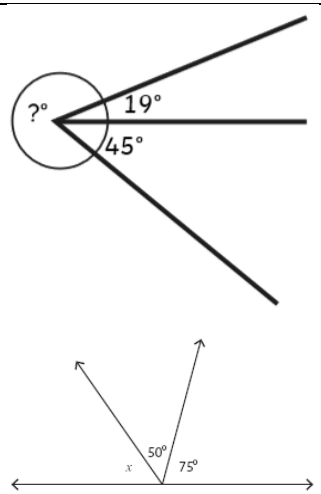
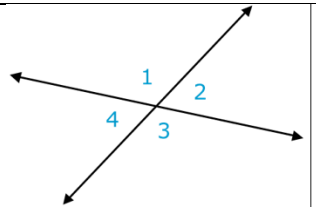
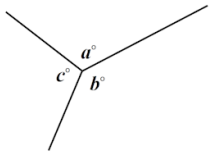
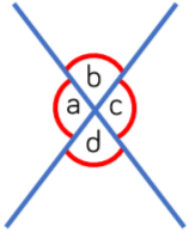
						Always, sometimes or never true? • A regular polygon has equal sides but not equal angles. • A triangle is a regular polygon. • A rhombus is a regular polygon. • The number of angles is the same as the number of sides in any polygon.
5	Identify 3-D shapes, including cubes and other cuboids, from 2-D representations. ↳ **GD objective:** Identify and create 3-D shapes, including cubes and other cuboids, from 2-D representations.	3-D shapes Nets Covering 3-D shapes in paint and then rolling it on paper to create nets.	What shapes do you make when these 2-D representations (nets) are cut out and folded up to make 3-D shapes? 	Draw a net of the following objects: 	Jack has two square-based pyramids that are the same size. He sticks the square faces together to make a new 3-D shape. How many faces and how many edges does his new 3-D shape have?	Amir says,  Do you agree? Explain why.

			Draw the 2-D representation (net) that will make this cuboid when cut out and folded up.  	Gabs is thinking of a 3-D shape. She says, *'My shape has five faces. One face is a square, the rest are triangles.'* What is the name of the 3-D shape?  Complete the table. 		

	Number of faces	Number of edges	Number of vertices	Is it a prism?
Shape A	6	12	8	Yes
Shape B				
Shape C				
Shape D				

5	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.	Squared paper Battleships Ceiling tiles as an x and y axis. Geoboards Pegboards Pegged-out areas outside	 What are the coordinates of the vertices of the rectangle? (,) (,) (,) (,)	Plot the following points on the grid. (3, 5) (4, 4) (0, 2) (4, 0) 	 Write the co-ordinates of the next triangle in the sequence. Annie is finding co-ordinates where the x-coordinate and the y-coordinate add up to 8. For example: (3, 5) 3 + 5 = 8 Find all of Annie's coordinates and plot them on the grid. What do you notice? Now do the same for a different total.	 The point is at (8, 3) Mo Alex The point is at (3, 8) Who do you agree with? Can you spot the mistake the other child has made?

Year 6

Year group:	NC L.O.	Practical	Pictorial	Abstract	Problem Solving	Reasoning
Objectives running through the unit						
6	[EXS] [KEY] Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.	Tape on desks for measuring vertically opposite angles.			 Bill has calculate you agree? ∠ 1= 130° ∠ 2= 55°  ∠ c= 130° What could ∠ a and ∠ b options.	Take a piece of paper and draw a large 'X'. Mark the angles on as shown.  Measure the angles you have drawn. What do you notice about angles b and d? What do you notice about angles a and c? Is this always the case? Investigate with other examples.

6	[EXS] [KEY] Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons.		Classify the quadrilaterals using the diagram below: 		Has a right angle	Does not have a right angle
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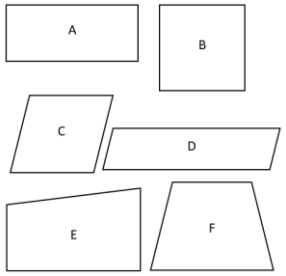
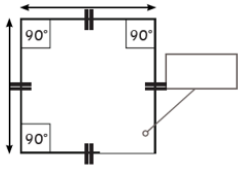
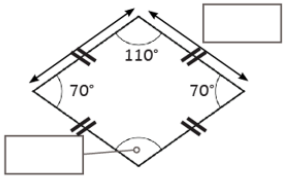
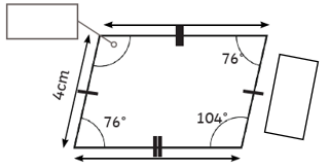
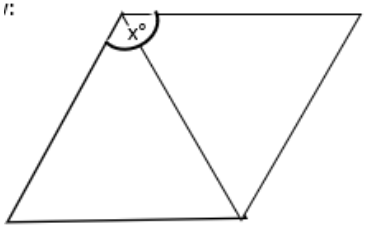
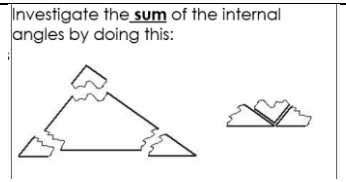
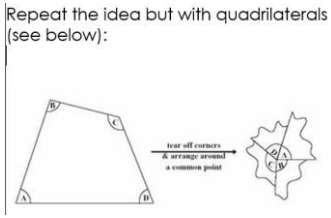
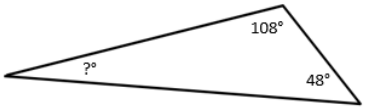
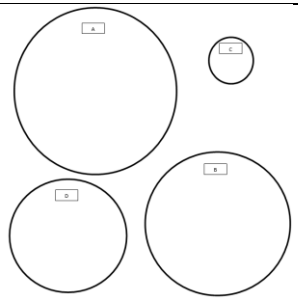
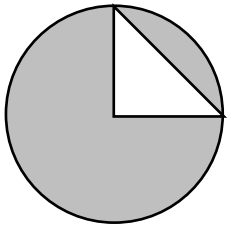
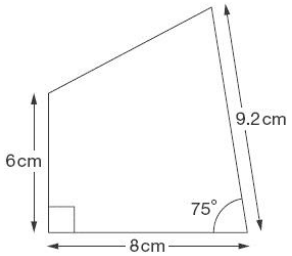
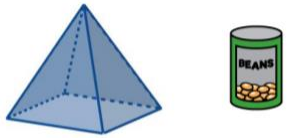
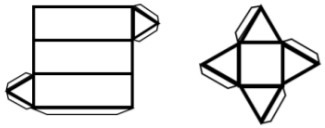
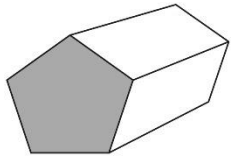
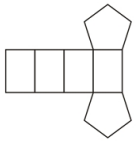
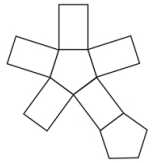
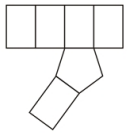
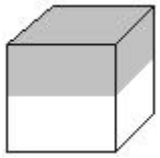
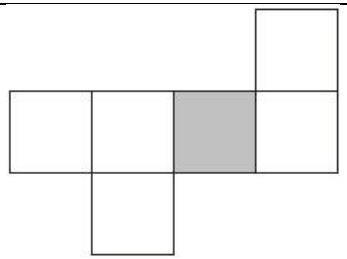
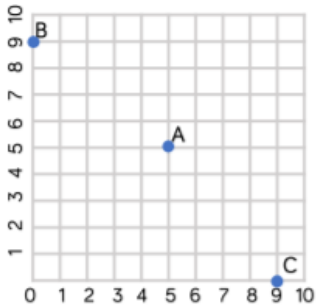
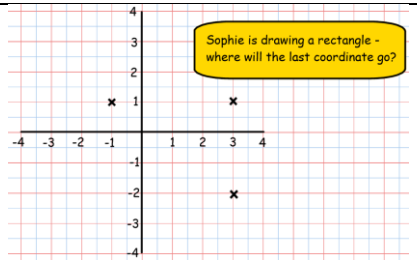
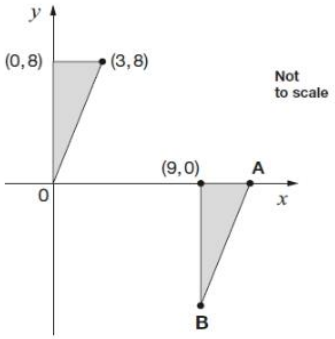
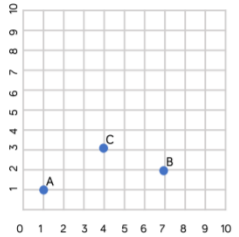
All sides have equal length		
Not all sides have equal length			  	Use your knowledge of properties of shapes to find the missing lengths / angles in the shapes below:    	Two equilateral triangles are arranged together as shown below:  Calculate angle x What is the quadrilateral that the two triangles make?	  Jack says: The unknown angle is 124°.  Prove that Jack is wrong using; a) a calculation. b) your knowledge of angle types.
6	Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.	Circular objects to measure	Cut out the circles below:	If a circle has a radius of 20cm, what is the diameter? If a circle has a diameter of 56cm, what is the radius? If a tiny circle has a radius of 0.243cm, what is the diameter?	The diagram shows a right-angled triangle inside a circle. The triangle has two vertices touching the circumference of the circle and a third touching the centre of the circle. The circle has a **diameter of 12cm**.	Measure the diameter and radius of 3 circles in the classroom. Is there a relationship between the radius and diameter? Could you express any relationship algebraically?

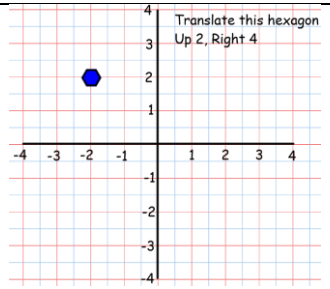
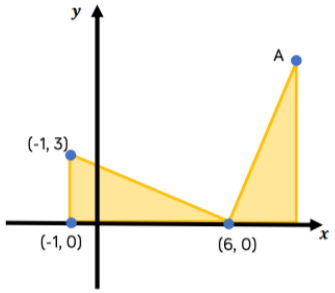
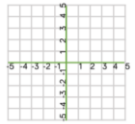
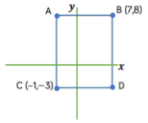
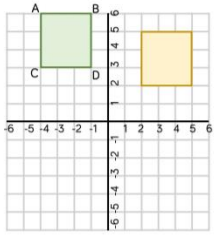
			 Fold the circles in half, unfold, the fold in half along a different line. The point where the two folds meet is the centre point. Measure the length from the centre of the circle to the edge of the circle. This is the radius. Now measure the length of one of the complete folds, through the centre point. This is the diameter.		What is the **area** of the triangle? 	
6	Draw 2-D shapes using given dimensions and angles. ↳ **GD objective:** Draw 2-D shapes to different scales using given dimensions and angles.		Here is a sketch of a quadrilateral. It is not drawn to scale.	Draw an equilateral triangle with side lengths of 6 cm. Draw a rectangle with a perimeter of 24cm Draw a right-angled triangle with an area of $10cm^2$	Eva has drawn a scalene triangle. Angle A is the biggest angle. Angle B is 20° larger than angle C. Angle C is the smallest angle, and it is 70° smaller than angle A. Use a bar model to help you calculate the size of each angle, then construct Eva's triangle.	

			 Draw the full-size quadrilateral accurately below. Use a protractor (angle measurer) and a ruler. Two of the lines have been drawn for you.		Is there more than one way to construct the triangle?	
2020 Guidance		**6G–1** Draw, compose, and decompose shapes according to given properties, including dimensions, angles and area, and solve related problems. Year 6 document, pages 53-57.				
6	Recognise, describe and build simple 3-D shapes, including making nets.		Draw possible nets of these three-dimensional shapes. 	What three-dimensional shape can be made from these nets? 	This is a drawing of a pentagonal prism.  Tick (✓) the one shape that is a net for the pentagonal prism.	

					   Here is a cube. The cube is shaded all the way round so that the top half is grey and the bottom half is white.  Here is the net of the cube. Complete the shading.	

6	Describe positions on the full coordinate grid (all four quadrants).	Geoboards Pegboards Pegged-out areas outside Quadrant grids on the ceiling		Chris plots three coordinates. Write down the coordinates of points A, B and C.  	 Here are two **identical** shaded triangles on coordinate axes.  Write the coordinates of points A and B.	Marie has written the coordinates of point A, B and C. A (1, 1) B (2, 7) C (3, 4) Mark Marie's work and correct any mistakes. 

6	Draw and translate simple shapes on the coordinate plane and reflect them in the axes.	Geoboards Pegboards Pegged-out areas outside Quadrant grids on the ceiling		 Use the graph describe the translations. One has been done for you. From ▭ to ▭ translate 8 units to the left.  From ▭ to ▭ translate __ units to the left and __ units up. From ▭ to ▭ translate 4 units to the ____ and 5 units ____. From ▭ to ▭ translate __ units to the ____ and __ units ____.	The diagram shows two identical triangles. The coordinates of three points are shown. Find the coordinates of point A.  Draw a shape using the coordinates (-2, 2), (-4, 2), (-2, -3) and (-4, -2). What kind of shape have you drawn?  Work out the missing coordinates of the rectangle. 	True or false? Sam has translated the square ABCD 6 units down and 1 unit to the right to get to the yellow square.  Explain your reasoning.