Shape Prior Assessment Question 9

Objective: I can measure angles with a protractor or angle measurer.

NC Sh5: recognise angles where they meet at a point or are on a straight line.

Teacher Input Ideas:

Encourage the children to discuss and research the definition of angle. What is an angle? Ask the children to look around their classroom or the school for examples of different angles. What can they find? Which is the most common angle they can find? Can they name the different types of angles: acute, right, obtuse, reflex? How do they know what angle each one is? How can we measure the size of an angle accurately? What tool would you use? When may we need to find the angle of something?

Show the children a protractor and discuss the key parts that make it a useful measuring tool. Discuss the centre point, which is placed where 2 lines meet (vertex). Discuss how the protractor helps to measure the amount of turn from one line to another.

Show the children the line used at the bottom of the protractor; this is often called a base line. Model placing this on to one of the lines in an image. Discuss how it is important to check that the base line is on the line of the angle accurately and the centre point is also at the end of the line when drawing angles and measuring angles. Now we need to measure the amount of turn from one line (the starting point) to where the other line has stopped turning. Or some say measure the space between where the 2 lines meet.

Introduce the inner and outer scale and encourage the children to identify that we must use the scale with 0 on the base line to ensure we are measuring from one line to the other. Model following the scale around until the other line appears in view and mark where this is on the scale.

Encourage the children to use a protractor and measure an angle given to them. With a partner, they could measure question 9c from their prior learning assessment, to check if measured accurately. Use this time to monitor accurate use of the protractor. Provide children opportunities to measure other angles and model measuring angles in different shapes using a protractor.

Practice Activities

Purple Practice: most suited for children who made errors in Question 9c and would benefit from measuring angles between 2 lines, before finding angles in shapes.

Children to measure the angles on the sheet using a protractor. The angles get more challenging as the children need to measure acute and obtuse angles in different orientations, encouraging the child to change the position of the protractor and use the inner and out scales to measure the angles. Encourage the children to check accuracy and that the protractor stays in the correct position when measuring.

Green Practice: most suited for children who made errors in Question 9a and b in the prior learning assessment.

The children are provided with quadrilaterals and triangles and need to measure the size of the angles using a protractor. The children should be encouraged to use a protractor accurately and check that their answers are correct by identifying that all quadrilaterals have angles adding to 360 degrees and all triangles have angles adding to 180 degrees. This task will also prepare the children for finding missing angles in Q10 of the prior learning assessment.

Yellow Practice: Most suited for children who need to further secure measuring angles in shapes and would benefit from measuring angles in polygons.

This activity provides the children with the opportunity to measure angles inside polygons. The children should apply knowledge that all the angles in quadrilaterals add to 360° to check that they have measured each angle accurately. They are also provided with the challenge of ensuring that the angles they have measured total 540° in the pentagons and 720°in the hexagons. This task will also prepare the children for finding missing angles in Q10 of the prior learning assessment. You should also promote the use of reasoning skills in this activity.

Mastery: For this activity, the children are to apply their measuring skills to prove which statements are true and which statements are false. Children should suggest that they need to measure the angles to check which children are accurate and which children have measured incorrectly. Children should also show confidence in recognising right angles and angles that are close to right angles, proving without the need to measure these with a protractor. Encourage the children to talk about which children are accurate and where the errors may be with the children's measuring.

Answers:

Purple: accept answers with 1 degree difference.

1) 47°	2) 26°	3) 120°	4) 145°
5) 146°	6)31°	7)32°	8)155°

Green: accept answers with 1 degree difference. However, discuss with the children that quadrilateral degrees total 360 and triangles total 180 to help them check the accuracy of their answers.

1)	a)120°	b)60°	c) 60°	d) 120°
2)	a)115°	b)85°	c) 85°	d) 75°
3)	a)103°	b)55°	c) 22°	
4)	a)59°	b)90°	c) 31°	
5)	a)104°	b)104°	c) 76°	d) 76°
6)	a)100°	b)80°	c) 90°	d) 90°

Yellow:

1	a)105°	b)75°	c) 90°	d) 90°		
2	a)76°	b)104°	c) 76°	d) 104°		
3	a)135°	b)90°	c) 135°	d) 90°	e)90°	
4	a)50°	b)130°	c) 100°	d) 130°	e)50°	f)260°
5	a)136°	b)134°	c) 90°	d) 90°	e)90°	
6	a)54°	b)54°	c) 252°	d) 54°	e)54°	f)252°

Discuss with the children what they notice about some of the angles being the same size, such as in Q2, 4 and 6. Encourage the children to explain the use of symmetry and parallel lines. Encourage the children to reason why the angles cannot be different sizes.

Mastery:

1) True	**2) false**	**3) true**
4) false	**5) false**	**6) true**

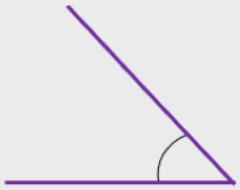
BRICKWORK Mathematics

Purple Activity

LO: I can use a protractor to draw an accurate angle.

Predict the size of the angle. Then use a protector to accurately measure this.

1)



= °

2)

= °

3)

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4)

= °

5)

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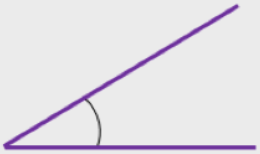
6)



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7)

= °

8)

= °

Challenge: What is the size of the other angle in each image?

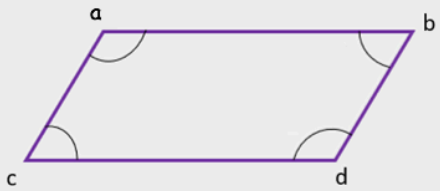
BRICKWORK Mathematics

Green Activity

LO: I can measure the size of angles accurately.

Predict the size of the angles and measure each accurately with a protractor.

1)



a = °
b = °
c = °
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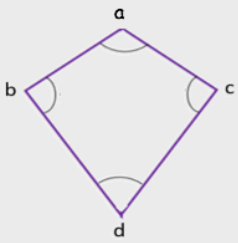
2)



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3)

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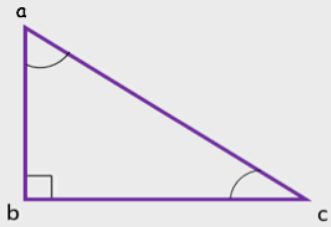
4)



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5)

a = °
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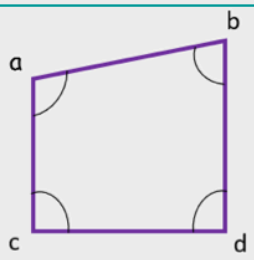
6)



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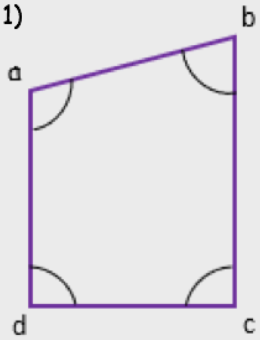
BRICKWORK Mathematics

Yellow Practise

LO: I can measure the size of angles accurately.

Predict the size of the angles and measure each accurately with a protractor.

1)



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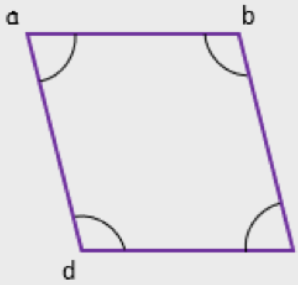
2)



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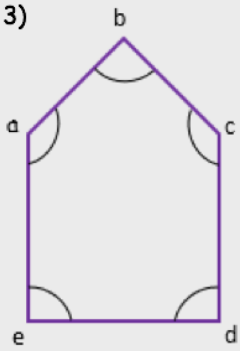
3)



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c = °
d = °
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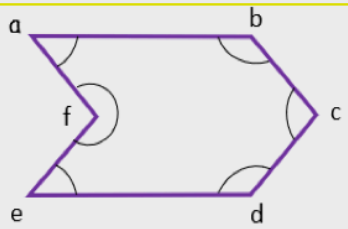
4)



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b = °
c = °

d = °
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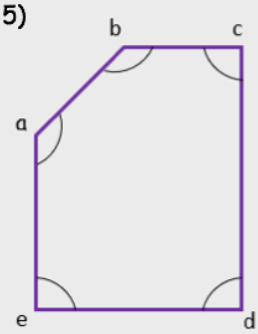
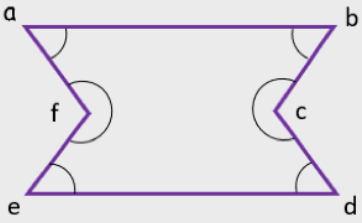
f = °

5)



a = °
b = °
c = °
d = °
e = °

6)



a = °
b = °
c = °

d = °
e = °
f = °

Challenge:
The angles in a pentagon always add up to 540°.
The angles in a hexagon always add up to 720°.
Use this information to check your measuring is accurate.

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Mastery

Look at angle X in each image. Which statements are true and false?