

Kingslea Primary School

Planning for Maths



Year Group: 6
Term: Summer 2
Date: Week 3-4

Unit: Geometry - angles
Weekly vocabulary: estimate, angle, acute, obtuse, reflex, right angle, degrees, sum,

Previous learning: This is the first time this year chn have come across the unit and have been taught these skills explicitly. Chn will build on their experience of different types of angles and how to use a protractor from Year 5. They will also use their knowledge of angles on a straight line and around a point from Year 5 to find missing angles.

NC Objectives and Learning Challenge	Mental Warm-up	Teacher Input:	Activities:	Scaffolding and Support:	Notes: (e.g, retrieval practice, marking focus)
<p>Session: 1</p> <p>NC Objective: draw given angles, and measure them in degrees (°) (Yr5)</p> <p>LC: Can I estimate and identify angles?</p>	<p>Different types of angles Identify the acute, obtuse and reflex angles.</p>	<p>Estimating and measuring angles What is an angle? How are they measured? What types can you name? Quick check on identifying different types of angle. What size is this angle? Ask chn to estimate to the nearest 5 degrees. How do you estimate? Chn can change estimates. Discuss how to measure the angle accurately with a protractor. Look back at estimates. Repeat with other angles. Move on to how they can draw an angle without a protractor (ruler only). Draw 45° angle with a ruler only. Discuss how they can use the lines in their books to help them be more accurate and their knowledge of angles to get as close as possible. Repeat with a 110° angle.</p>	<p>Chn to attempt to draw angles between 0° and 180°. They should start with easier multiples and score themselves each time. Within 10° = 5 points Within 5° = 10 points Within 2° = 20 points</p> <p>If chn are more than 10° out then they retry the angle again.</p>	<p>Scaffold Leave instructions on how to complete the process up on the board. Group chn who are struggling and work through 1 angle at a time.</p> <p>Support Chn to attempt angles that are multiples of 10/5° only. This will also support working out their leeway.</p> <p>Ext Draw angles over 180° (reflex angles). Chn only moved onto this if they are consistently within 5°.</p>	<p>T / TAs need to check how accurately chn are measuring – from a distance within the lesson.</p>
<p>Session: 2</p> <p>NC Objective: draw given angles, and measure them in degrees (°) (Yr5)</p> <p>LC: Can I draw angles to the nearest 2 degrees?</p>	<p>Estimate the angle http://nrich.maths.org/1235</p>	<p>Drawing angles with a protractor Discuss how to draw an angle using a protractor. It would probably be useful to talk through the protractor first, particularly focusing on the scales. How do you draw an angle of a given size? Use the lines in the chn’s books to start and then model using the protractor to draw different angles (below 180° to begin with).</p>	<p>Chn draw a range of angles with their protractor.</p> <p>Encourage them to check that their angle looks sensible and to check their measurements by taking the protractor off and re measuring the angle.</p>	<p>Scaffold Step-by-step guide on using a protractor available.</p> <p>Support Chn to draw angles of multiples of 5 and 10 degrees only to build confidence.</p> <p>Ext Draw angles over 180° (reflex angles). Chn only move onto this if they are accurate with below 180°.</p>	<p>Again adults will need to check that individuals are using the protractor accurately.</p> <p>Focus on using a half protractor only at this stage.</p>
<p>Session: 3 / 4</p> <p>NC Objective: find unknown angles in any triangle and quadrilateral</p> <p>LC: Can I find missing angles in triangles and quadrilaterals?</p>	<p>Properties of shapes Discussion about shape language with some identifying</p> <p>Sides of 2D shapes Qu.s based on how many sides common polygons have.</p>	<p>Angles in a triangle and quadrilaterals Some chn may already have the knowledge that the angles of a triangle equal 180°. Prove this is the case: take a triangle, cut the angles off and rearrange the angles on a straight line. Discuss how they can use this knowledge to find out missing angles in a triangle. Include a right-angled triangle in the examples worked through. Look at the angles in a quadrilateral and again prove what they equal by cutting the angles of different types of quadrilaterals and showing the children that they equal 360°. Look at finding missing angles in a variety of quadrilaterals. What is the same / different about finding angles in triangles and quadrilaterals?</p>	<p>Chn to work out the missing angles in a range of triangle and quadrilaterals. They should show their workings each time.</p>	<p>Support Chn to start with triangles only to begin with so they can get used to the structure of working out the missing angles.</p> <p>Ext Chn can work missing angles of shapes which combine the knowledge of triangles and quadrilaterals (and maybe Yr 5 knowledge such as a straight line).</p>	<p>This will probably go over more than one session and so will continue into the following week.</p>

<p>Session: 5</p> <p>NC Objective: find unknown angles in regular polygons</p> <p>LC: Can I find angles in regular polygons?</p>	<p>Lines of symmetry Identify whether the pictures have lines of symmetry. Discuss which common shapes have lines of symmetry.</p>	<p>Angles in polygons Discuss what an interior angle is and show example within a triangle. Explain that the interior angles of regular shapes are always equal and look at examples of this.</p> <p>Once the chn have had time to look at regular shapes and their interior angles in more detail, discuss any patterns that they not and elicit that the pattern increases by 180° each time.</p> <p>Look at other tricks for angle sizes in polygons.</p>	<p>Chn to complete a table for a variety of regular polygons. They should look at the interior angles (on their own and also as a total). They should then look for any patterns.</p>	<p>Scaffold Chn to have access to the regular polygons so they can measure the angles to help them complete the table.</p> <p>Support Chn can complete the table for fewer shapes.</p> <p>Ext Writing a formula and using it to work out shapes with a larger amount of sides.</p>	<p>Chn can mark their own answers in this session.</p>
<p>Session: 6</p> <p>NC Objective: recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles</p> <p>LC: Can I find missing angles?</p>	<p>Sorting shapes Placing the shapes in the Carroll diagram whilst discussing names and properties.</p>	<p>Missing angles This lesson will use and combine the chn's knowledge for missing angles in various forms. Remind chn (or ask them to remind you) how many degrees in different shapes and line forms. You may have to talk them through how vertical angles work.</p> <p>Look at examples of working out missing angles of different line forms as this is what the majority will be focusing on. Make sure to model how to write the workings out.</p>	<p>Chn to complete working out the missing angles in various line forms.</p> <p>Then they can move onto describing angles</p> <ul style="list-style-type: none"> a) On a compass point b) On a clock 	<p>Support Chn can look at whole turns on the clock to support with calculation.</p> <p>Ext Chn to work out the missing angle(s) where they have to combine more than one piece of knowledge.</p>	<p>Answers to be marked as a class.</p> <p>This session could also be used to catch-up chn who have struggled in previous sessions.</p>