

Booragul Public School NSW Syllabus for the Australian Curriculum – Measurement and Geometry

Sub Strand – Angles 2			
Outcome	Teaching and Learning Activities	Notes/ Future Directions/Evaluation	Date
Stage 2 A student: <ul style="list-style-type: none"> › uses appropriate terminology to describe, and symbols to represent, mathematical ideas MA2-1WM › checks the accuracy of a statement and explains the reasoning used MA2-3WM › identifies, describes, compares and classifies angles MA2-16MG 	Language Students should be able to communicate using the following language: angle, arm, vertex, right angle, acute angle , obtuse angle , straight angle , reflex angle , angle of revolution . The use of the terms 'sharp' and 'blunt' to describe acute and obtuse angles, respectively, is counterproductive in identifying the nature of angles. Such terms should not be used with students as they focus attention on the external points of an angle, rather than on the amount of turning between the arms of the angle.		
<h2 style="margin: 0;"><u>Ignition Activities</u></h2> <p>Angle Features Demonstrate the features of an angle with two strips of cardboard joined with a fastener. Explain movement of arms to make angles. Students make their own angle tester and then find angles in room. Students draw objects and mark angles they have tested.</p>			Literacy Critical and creative thinking
<p>Alphabet Students make the letters of the alphabet in capitals with match sticks and classify them according to the number of lines in their construction. Which letter has the most acute/obtuse/right angles, straight, reflex or a revolution?</p>			
<p>Angle Tester Students produce an angle tester by folding a piece of paper in whatever way they want. Ask students to describe their angles. They then test angles around the room to find angles that are larger, smaller or the same size as their testers. Record results by means of a chart or table. Ask students to fold pieces of paper to make a 'square corner'.</p>			
<h2 style="margin: 0;"><u>Explicit Mathematical Teaching</u></h2> <p>Compare angles and classify them as equal to, greater than or less than a right angle (ACMMG089)</p> <ul style="list-style-type: none"> • compare angles using informal means, such as by using an 'angle tester' • recognise and describe angles as 'less than', 'equal to', 'about the same as' or 'greater than' a right angle 			

<ul style="list-style-type: none"> • classify angles as acute, right, obtuse, straight, reflex or a revolution ▮ describe the size of different types of angles in relation to a right angle, eg acute angles are less than a right angle (Communicating) ▮ relate the turn of the hour hand on a clock through a right angle or straight angle to the number of hours elapsed, eg a turn through a right angle represents the passing of three hours (Reasoning) • identify the arms and vertex of the angle in an opening, a slope and/or a turn where one arm is visible and the other arm is invisible, eg the bottom of an open door is the visible arm and the imaginary line on the floor across the doorway is the other arm • create, draw and classify angles of various sizes, eg by tracing along the adjacent sides of shapes ▮ draw and classify the angle through which the minute hand of a clock turns from various starting points (Communicating, Reasoning) 		
<h2 style="margin: 0;"><u>Whole Class Teaching Activities</u></h2> <p style="margin: 0;">Teaching Space and Geometry CD ROM –Stage One –Unit-Lines</p> <p style="margin: 0;">Lesson one: Investigating lines creating and investigating lines creating and investigating lines.</p> <p style="margin: 0;">Lesson two: Lines and Angles – creating and comparing angles.</p>		
<p style="margin: 0;"><u>Using Maths Tracks –Stage One-Two Dimensional Space- Lines and Angles</u></p> <p style="margin: 0;">Student activities include identifying and naming parallel, vertical and horizontal lines in pictures and the environment; identifying the arms and vertex of the angle in a corner; comparing angles by placing one angle on top of another.</p> <p style="margin: 0;">Scroll through for activities on Angles. Very visual and suitable for projecting onto a screen or interactive whiteboard</p> <p style="margin: 0;">http://lrr.dlr.det.nsw.edu.au/LRRDownloads/7099/1/44197_S1B_U44_Print.Acro4_1.3.pdf</p>		
<p style="margin: 0;">Corners as Angles</p> <p style="margin: 0;">Part A</p> <p style="margin: 0;">Students use one corner of a large cardboard square or rectangle to find other corners of the same size eg the corner of the classroom, the corner of a book. They then find angles that are less than, equal to or greater than, about the same as the corner of the square.</p> <p style="margin: 0;">Part B</p> <p style="margin: 0;">In pairs, students are given a selection of regular shapes including squares, rectangles, and triangles to compare the angles at the corners by superimposing one over the other. They could sort the shapes according to the size of the angles eg the same as a square, larger than a square, smaller than a square. Students then discuss and record results.</p>		

<p>Sample Units of Work pg78</p> <p>Geoboard Shapes and Angles</p> <p>In pairs, students use geoboards and elastic bands to create shapes and discuss which shapes have the most sides and the most corners.</p> <p>Students investigate angles on the geoboard and compare the number of sides and corners of the shapes they have created.</p> <p>Students transfer shapes to dot paper and record the name of the shape, the number of sides and the number of corners.</p> <p>Possible questions include:</p> <ul style="list-style-type: none"> ■ how can you describe the angles at the corners of each shape? ■ are the angles at the corners of each shape the same or different? ■ what happens when you place an angle from a square on top of an angle at the corner of a hexagon? ■ can you describe the difference? 		
<p>Creating Angles</p> <p>Students construct a variety of angles using cardboard strips or geostrips.</p> <p>Students are asked to make:</p> <ul style="list-style-type: none"> ■ an angle and then make one that is smaller and one that is larger ■ an angle that looks like the corner of a square ■ angles of the same size but with arms of various lengths ■ an angle that looks like one made by another student. <p>Results can then be recorded in a table.</p>		
<p><u>Whole Class Teaching and Guided Group Activities</u></p> <p>Using Maths Tracks-Stage two-Angles</p> <p>Student activities include identifying and naming perpendicular lines; identifying angles with two arms in practical situations; identifying the arms and vertex of the angle in an opening, a slope and a turn where one arm is visible; comparing angles using informal means such as an angle tester; describing angles using everyday language and the term 'right' to describe the angle formed when perpendicular lines meet; drawing angles of various sizes by tracing around the adjacent sides of shapes and describing the angle drawn. Meets BoS outcomes SGS2.2b, WMS2.2, WMS2.3, WMS2.5. Includes teacher notes.</p> <p>Many activities suitable to project onto screen or whiteboard</p> <p>http://lrr.dlr.det.nsw.edu.au/LRRDownloads/8198/1/44338_2B_u51_Print.pdf</p> <p>Please refer to the DET resource book 'Teaching About Angles –Stage 2' for the in depth lesson for each of the following activities. Choose from the activities the ones that would be most suitable for your class of children to develop their understanding.</p> <p>Pattern blocks- Lesson One pg 12</p> <p>Students create, describe and draw patterns, using pattern blocks.</p>		

Windmill patterns- Lesson Two pg 14

Students make *windmill* patterns by fitting pattern blocks of the same colour around a point. They use the patterns to compare the sizes of the pattern block corners.

Acute and obtuse angles-Lesson Four pg 18

Students look for acute and obtuse angles in the classroom. They make drawings of the angles, compare the angles with the corners of pattern blocks, and classify the angles according to size.

Angles in geometrical patterns-Lesson Five pg 20

Students find and label acute, obtuse, reflex, revolution, straight and right angles in a pentagram or octagon pattern. Students draw and measure the angles.

Equal angles- Lesson 6 pg 22

Students use different methods to check that all of the angles on a windmill pattern are the same size, even though the lines are of different lengths.

Measuring angles in the classroom -Lesson Eight pg 26

Students use the windmill pattern as an angle tester to measure and record at least three different angles found in the classroom. Students record an acute, an obtuse, straight, reflex, revolution and a right angle.

Measuring body angles- Lesson Nine pg 28

Students investigate and record angles made by parts of their body, using the windmill angle tester to measure the angles.

Measuring the angle of opening of doors- Lesson Eleven pg 32

Students are introduced to the concept of a one-line angle by measuring the angle of opening of a door. Students measure the angle of opening of the door on the house activity sheet and a *floating door*, using pattern block corners.

Doors that open in different directions- Lesson 12 pg 34

Students investigate the angle of opening in doors that open in different directions. Students use pattern block corners to measure and draw the angle of opening of all doors on the house activity sheet.

Measuring angles of slope -Lesson 13 pg 36

Students use sloping rulers to identify and investigate angles of slope. Students measure angles of slope with pattern blocks and record by drawing and labelling the angles.

Clocks- Lesson 14 pg 38

Students identify and describe the angles made by a turning clock hand.

Drawing two-line and one-line angles- Lesson 15 pg 40

Students match two-line and one-line angles in different situations and explain the main features of an angle.

Computer Learning Object

Digital Geoboard

Using Learning Objects To Teach Mathematics CD ROM or TaLE-Two Dimensional Space

Previous NAPLAN Questions

Year 3 2008

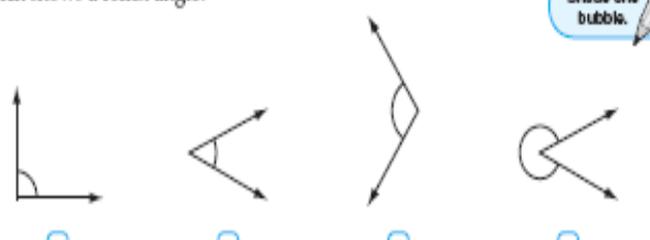
9 Which pair of scissors has its blades opened to the largest angle?



Shade one bubble.

Year 5 2009

11 Which shows a reflex angle?



Shade one bubble.

Pre Assessment

Give students a picture of a polygon.

Colour a corner in blue.

Colour an angle in red.

Put a cross in two corners that are the same size.

Post Assessment**Two Line Angle Tasks pg 54-57**

These tasks are designed to assess students' current knowledge and understanding of angles. Teachers may find it helpful to use these questions with a small number of individual students before or after the implementation of a sequence of angles lessons. An analysis of students' responses may assist in planning an appropriate program of lessons.