**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

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| TERM:  | WEEK: 4 | STRAND: Measurement & Geometry | **SUB-STRAND:** Angles 1 | **WORKING MATHEMATICALLY:** MA3-1WM  |
| OUTCOMES: MA3-16MG | **Measures and constructs angles, and applies angle relationships to find unknown angles.** |
| **CONTENT:**  | **Construct angles using a protractor*** Compare the sizes of two or more angles in degrees, eg compare angles in different two-dimensional shapes CT
* Estimate angles in degrees and check by measuring
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| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | * Students describe the features of angles and list measurements of reflex angles. Students order angles from smallest to largest or largest to smallest.
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| WARM UP / DRILL | * In pairs, one student draws an angle and then gives it the other student. The second student then has to estimate the size of the angle and draw an angle small or larger than the original angle. Each student measures their partner’s angle and they discuss if the second angle was smaller or larger.
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| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  | * I turn the dial on the stove 75 degrees from the Start position to the pre-heat setting. If I continue to turn the dial in a clockwise motion how many degrees further will I need to rotate it to return to the Start position?
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| QUALITY TEACHING ELEMENTS | **INTELLECTUAL QUALITY** | **QUALITY LEARNING ENVIRONMENT** | **SIGNIFICANCE** |
| * Deep knowledge
* Deep understanding
* Problematic knowledge
* Higher-order thinking
* Metalanguage
* Substantive communication
 | * Explicit quality criteria
* Engagement
* High expectations
* Social support
* Students’ self-regulation
* Student direction
 | * Background knowledge
* Cultural knowledge
* Knowledge integration
* Inclusivity
* Connectedness
* Narrative
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| RESOURCES |  |

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES |
| Revise angle types and sizes.* Provide students with strategies to estimation by practising examples on the board.
* Revise how to use a protractor to measure angles sizes.
 | LEARNING SEQUENCERemediationS2 or Early S3 | * **Study the clock:**
* Write down 10 times that the clock hands will form. Ask students to describe, estimate and label the angles these times make. Using geo-strips and/or clock strips measure the angles. List the angles (times) from smallest to largest.
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| LEARNING SEQUENCES3 | * **2D shapes:**
* Provide students with a variety of 2D shapes (start with easier shapes). In pairs, have students measure each of the shapes angles at their corners.
	+ Is each corner in one shape the same? Ask students to explain their answer.
	+ When you add the total angles of each corner in each together what is their sum?
	+ Order the angles in each shape and provide reasoning about why some corners are smaller or larger.
* **Measuring Angles in Two-dimensional Shapes**
* Students are provided with a variety of two-dimensional shapes. Using a protractor, they measure the angles within the shapes.

Possible questions include:* How did you measure the angles?
* Using your knowledge of angle properties of two dimensional shapes, what do you expect your measurements to show?
* How can you record your measurements?
* How can you classify the angles you have found?
* How can you classify the shapes according to their angles?
* How can you compare the shapes by their angles?
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| LEARNING SEQUENCEExtension Early S4 | * **Angled Out:**
* Provide students with various shapes (not tradition shapes) and have them write a description of the shapes using the types of angles and sides.
* Students draw a shape with at least one acute angle, one obtuse angle and one reflex angle. Student could use the following description to draw a quadrilateral, octagon, hexagon and/ or pentagon – discuss how to group the shapes. Colour the angles reflex angles are red, acute angles are blue and obtuse angles are green.
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| **EVALUATION & REFLECTION** |  |