**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| TERM:  | WEEK: 3 | STRAND: MEASUREMENT & GEOMETRY | **SUB-STRAND:** ANGLES 2  | **WORKING MATHEMATICALLY:** MA3-1WM |
| OUTCOMES: MA3-16MG | **Measures and constructs angles, and applies angle relationships to find unknown angles** |
| **CONTENT:**  | **Investigate, with and without the use of digital technologies, angles on a straight line, angles at a point, and vertically opposite angles; use the results to find unknown angles*** investigate, with and without the use of digital technologies, adjacent angles that form a right angle and establish that they add to 90°
* investigate, with and without the use of digital technologies, adjacent angles on a straight line and establish that they form a straight angle and add to 180°
* investigate, with and without the use of digital technologies, angles at a point and establish that they form an angle of revolution and add to 360°
 |
| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | * Ask students to draw a picture that incorporates 3-4 different angles. Have students label these.
 |
| WARM UP / DRILL | * Provide students with the activity sheets “What’s my name worth?” Found at <http://www.uen.org/Lessonplan/preview.cgi?LPid=21520>
 |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  | * A ceiling fan rotates 75 degrees and then stops. How many more degrees does it need to rotate in order to make a full rotation?
 |
| 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
 |
| RESOURCES | Protractors – 1 per student, copies of worksheet – 1 per student, geoboards and elastic bands – 1 per pair of students.  |

**TEACHING AND LEARNING EXPERIENCES**

|  |  |
| --- | --- |
| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES |
| * **View** the information available about adjacent angles at <http://www.mathsisfun.com/geometry/adjacent-angles.html> and <http://www.icoachmath.com/math_dictionary/adjacent_angles.html> and <http://www.palmbeachschools.org/students/Grade12/GeometryActivity2.pdf>
* **Model** how to find the value of adjacent angles that total 900 1800 and 3600. Make sure that you point out the importance of checking that the angles total the correct amount.
* Provide students with mini whiteboards or something similar (i.e. plastic plates) and have them determine the size of adjacent angles. For instance draw an adjacent angle on the board that totals 900 and label one section 450. Students are then required to write the value of the other angle on their mini whiteboards. Repeat.
 | LEARNING SEQUENCERemediationS2 or Early S3 | * **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.
* **Geoboards (modified):** Provide students with geo boards and elastic bands. Have them explore and make a range of angles.
 |
| LEARNING SEQUENCES3 | **Whole Class Instruction and Modelled Activities*** **Worksheet:** Use the worksheet available at [http://www.google.com.au/adjacentangleworksheet](http://www.google.com.au/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=7&ved=0CEsQFjAG&url=http%3A%2F%2Fmail.clevelandcountyschools.org%2F~ccselem%2FFOV1-00036ADE%2FFOV1-00036AEE%2FAdjacent%2520Angles%2520I%2520and%2520II.doc%3FPlugin%3DLoft&ei=AwX9U6PLCMvr8AWU2IHwCQ&usg=AFQjCNH2-H9uRl8pLavHRmhWYHtfyit3tw&bvm=bv.74035653,d.dGc) which discusses adjacent angles.
* **Geoboards:** Provide students with geo boards and elastic bands. Have them explore and make a range of adjacent angles. Have pairs of students work together and pose problems for their partners to create. I.e. “Create a complimentary angle that has one angle of 300.”
* **Adjacent Angles – Task Cards:** Free task cards available from TPT which explore adjacent angles <http://www.teacherspayteachers.com/Product/Angle-Measures-Task-Cards-Reasoning-with-Angle-Relationships-FREEBIE-956605>
* **Drawing adjacent angles:** Ask students to draw and label a range of adjacent angles including adjacent, supplementary and complimentary. Have students write a brief description of these in their workbooks.
 |
| LEARNING SEQUENCEExtension Early S4 | * **Activity**
 |
| **EVALUATION & REFLECTION** | **Student engagement:** **Achievement of Outcomes:****Resources:** **Follow up:** |

* All assessment tasks should be written in **red** and planning should be based around developing the skills to complete that task.
* Assessment rubrics or marking scale should be considered.

