**MATHEMATICS STAGE 2**

**TEACHING AND LEARNING OVERVIEW**

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| TERM:  | WEEK: 2.2 | STRAND: Measurement & Geometry | **SUB-STRAND:** 2D Space 1 | **WORKING MATHEMATICALLY:** MA2-1WM & MA2-2WM |
| OUTCOMES: MA2-15MG | **Manipulates, identifies and sketches two dimensional shapes, including special quadrilaterals, and describes their features** |
| **CONTENT:**  | **Compare and describe features of two dimensional shapes, including special quadrilaterals*** Recognise that the name of a shape does not change if its size or orientation in space is changed
* Draw representations of regular and irregular two-dimensional shapes in different orientations
* Construct regular and irregular two-dimensional shapes from a variety of materials, e.g. cardboard straws, pattern blocks
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| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | **Pre-Assessment**Students are given clues to help them identify a given shape.<http://au.ixl.com/math/year-4/which-2-dimensional-shape-is-being-described> |
| WARM UP / DRILL | Provide students with a whiteboard and ask them to draw a variety of shapes in different orientations. Students hold up their shape when they have completed their drawing. *This activity will also act as part of pre-assessment*. |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  | If Anne has three different length straws that she uses to construct a triangle, has she constructed a regular or irregular shape? |
| 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 | Small whiteboards, markers, shape template, pattern blocks, pattern picture cards, playdough, straws, string etc., paper, paint, crayon, pencils and tangram puzzles |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES |
| * **Explicitly communicate lesson outcomes & expected work quality.**
* **Define and reinforce metalanguage used in the unit:** parallel, congruent, angles, edges and vertices. Circle, triangle, quadrilateral, parallelogram, rectangle, rhombus, square, trapezium, kite, pentagon, hexagon, octagon, regular shape, irregular shape, orientation, features, properties, side, parallel, pair of parallel sides, opposite, length and vertex (vertices).
* **Review names of shapes.**

Discuss with students that even though the orientation of a shape changes, the name of the shape does not. Use some pre-printed shapes to stick on the board in various orientations and have students come and pick all the squares. Continue with various shapes. * **Modelled activity:**

Use this game to demonstrate that shapes in different orientations are still the same.<http://www.sheppardsoftware.com/mathgames/earlymath/shapes_shoot.htm>Students are provided with pattern picture cards and pattern blocks and asked to construct the given pictures and identify different shapes in their different orientations.  | LEARNING SEQUENCERemediationS1 or Early S2 | * **Trace and Label:** Students are given shape templates and asked to trace around them in various different orientations. Swap with a partner and have their partner label the shapes with the name.
* **2D Shape Pictures:** A basic site that allows students to build pictures with shapes**.**

<http://priorywoods.web4.devwebsite.co.uk/page_viewer.asp?page=Find+Out+About+Shapes&pid=167> |
| LEARNING SEQUENCES2 | * **Pattern Block Pictures:** Students use pattern blocks and mats to complete pictures. Students identify to a partner what shapes they have used to complete their picture.
* **Digital Tangram Puzzles:** Students use the computer game to make tangram puzzles to assist in recognising that shapes can be used to make pictures.

<http://pbskids.org/cyberchase/math-games/tanagram-game/>* **Investigation:** Provide students with a variety of materials, e.g. Cuisenaire Rods, straws of same / different lengths, play dough, string etc. Have students investigate the shapes they can make using the various materials. Students photograph the shapes they have made. Print these photos, students record the shape and its other attributes.
* **Assessment - Art Activity:** Provide students with paper, paint/crayons etc. Have them create a picture using shapes.

*Indicate to students that they need to include shapes in different orientations.* |
| LEARNING SEQUENCEExtension Late S2 or Early S3 | * Provide students with tangram puzzle pieces and have students investigate what pictures they could make. Have students record their puzzle and have a partner build it.
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| **EVALUATION & REFLECTION** | **Student Engagement:** **Achievement of Outcomes:****Resources:** **Follow Up:** |