**MATHEMATICS STAGE 1**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: | STRAND: Measurement & Geometry | **SUB-STRAND:** 2D Space 2 | **WORKING MATHEMATICALLY:**  MA1-1WM |
| OUTCOMES: MA1-15MG | | **Manipulates, sorts, represents, describes and explores two-dimensional shapes, including quadrilaterals, pentagons, hexagons and octagons.** | | |
| **CONTENT:** | | **Describe and draw two-dimensional shapes, with and without the use of digital technologies**   * Combine and split single shapes and arrangements of shapes to form new shapes, e.g. create a hexagon from six triangles * Draw and name two-dimensional shapes in different orientations, with and without the use of digital technologies * Recognise that the name of a shape does not change if its size or orientation in space is changed | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | **Pre-Assessment**  **Shape Pictures -** Students make a picture using different-sized paper shapes including circles, squares, triangles and rectangles. As students are working, the teacher asks the students to name the shapes they are using.Students glue their picture onto paper, add additional features, and describe their picture in sentences.  *Variation:* Students use a computer drawing program to create a shape picture. | | |
| WARM UP / DRILL | | Shapes flashcards | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | |  | | |
| 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 | | Metalanguage signage and environmental print, various paper shapes, glue, art paper, pattern blocks, transparent pattern blocks, overhead projector, geoboards, elastic bands, and 5 piece tangram puzzles. | | |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES | | |
| Explicitly communicate lesson outcomes and expectations of work quality.  * **Define and reinforce metalanguage** used in the unit. * **Pattern Blocks**   Students are given a variety of pattern blocks. Discuss the features of each block and count the number of sides and corners. Use the pattern blocks to make other shapes by joining. Model mathematical language while the students discuss the features of the shapes they are constructing, e.g. *Ellie has made a shape with all the sides equal and all corners equal.*   * **Collect a variety of 2D shapes** (pattern blocks, transparent plastic shapes) to use with an overhead projector and lead the following class activity as a discussion;   Place two identical equilateral triangles on the projector.  http://www.schools.nsw.edu.au/learning/7-12assessments/naplan/teachstrategies/yr2011/images/nn_spac_2D_01_02.jpg  Join the two triangles together to make a new shape.  Ask: *What shape have I made?*  http://www.schools.nsw.edu.au/learning/7-12assessments/naplan/teachstrategies/yr2011/images/nn_spac_2D_01_03.jpg | LEARNING SEQUENCERemediationES1 | * **Sorting Shapes:** Students are given a collection of regular and irregular shapes with three sides, four sides, five sides and six sides. Students are asked to sort the shapes into groups according to the number of sides. Students select one of the groups and arrange the shapes to form a picture. | |
| LEARNING SEQUENCES1 | * **Geoboards:** Students construct a large triangle on a geoboard using an elastic band.Possible questions include: * How many smaller triangles could you make inside your triangle? * How many different triangles can you make on your geoboard? * Can you make two triangles that are the same? * Can they fit better if we put them another way?   Students share their responses and describe how each triangle is different.  *Variation:* This activity could be varied using a square or rectangle.   * **Make a New Shape:** Provide students with geoboards and elastic bands. Draw a triangle on the board and ask Student A to make this shape on their geoboard. The student names the shape and states the number of sides. Both students draw and label the shape on dot paper.Student B is then asked to add another side to the triangle on thegeoboard. They name the new shape and state the number of sides. Again, both students draw and label the shape on dot paper. * **Investigation:** | |
| LEARNING SEQUENCEExtensionEarly S2 | * **Five-Piece Puzzle Pictures:** Provide a five-piece ‘tangram’ for students to cut out. Possible questions include: * Which shapes are in the puzzle? * Can you put the pieces back together to make a square?   Students make a picture using the five pieces, trace around the picture, and ask a peer to reconstruct it. | |
| **EVALUATION & REFLECTION** | **Student Engagement:**  **Resources:** | **Achievement of Outcomes:**  **Follow-up:** |