**MATHEMATICS STAGE 1**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: | STRAND: Space and Geometry | **SUB-STRAND:** 3D Space 2 | **WORKING MATHEMATICALLY:**  MA1-1WM |
| OUTCOMES: MA1-14MG | | **Sorts, describes, represents and recognises familiar three-dimensional objects, including cones, cubes, cylinders, spheres and prisms**  Describes mathematical situations and methods using everyday and some mathematical language, actions, materials and symbols –(WM1) | | |
| **CONTENT:** | | **Describes the features of 3D Objects**   * Represent three-dimensional objects, including landmarks, by making simple models or by drawing or painting * Choose a variety of materials to represent three-dimensional objects, including digital technologies * Explain or demonstrate how a simple model was made | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | **Pre-Assessment**  Teacher thinks of a 3D object. The students are invited to ask questions that require “yes” or “no” answers in order to work out the correct object. Note the types of questions that the students ask, including the mathematical language used. | | |
| WARM UP / DRILL | | Teacher displays flash cards featuring a variety of 3D objects. Students recall the name of the object. | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | | I have some 3D objects that have 12 faces altogether. What objects could I have and how many? | | |
| 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 | | Geometric 3D objects, assortment of everyday 3D objects, e.g. cereal boxes, cans of food, cardboard tubes, sticky tape, glue, 3D object bingo game, iPads or tablet with chosen app, blocks, folding shapes, tiles, cubes, straws, plasticine, centicubes, Lego | | |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES | |
| * **Explicitly communicate lesson outcomes and work quality.**  Define and Reinforce metalanguage used in the unit – cone, cube, cylinder, prism, sphere, surface, flat surface, curved surface and face.Revise the names and attributes of 3D objects including cone, cube, cylinder, prism, pyramid and sphere.  * Play bingo, matching the name of the 3D object to the drawing (e.g. from Sparklebox, Twinkl, Teach This).      * Students use apps on the iPad to create models of a variety of 3D objects. Apps suitable for this age group include * Tap Tap Blocks (free) * Cyberchase 3D Builder ($1.29) * Think 3D Free – (more complex) | LEARNING SEQUENCERemediationES1 or Early S1 | * By using moulds, students can create some 3D objects using plasticine. Students can also place the plasticine over the object to assist them to create the shape. * Students can use centicubes, MAB minis, Lego or similar to create rectangular prisms and cubes. * For the assessment task, students will use everyday language to describe the features and attributes of the 3D objects in their portfolio. |
| LEARNING SEQUENCES1 | * Students use Microsoft Word to create 3D objects, using the Insert>Shape menu. A variety of 3D shapes, including cylinders and prisms, can be created and formatted.  Students use plasticine to create models of 3D objects, including landmarks. Provide a selection of geometric and everyday 3D objects for students to reference.  * **Investigation:** Using a variety of packaging materials (e.g., cereal boxes, drink cans, cardboard tubes etc.) students will make their own robot. Each student will present their robot to the class, describing how they made it and what 3D objects have been used to make it. * **Assessment:** Students use a variety of materials, including digital technology, to create many samples of one 3D object to create a portfolio for that shape. Students will annotate, (either verbally or in written form) their models and describe the features and attributes of the 3D object they have modelled, using mathematical language. * As a class, discuss each of the materials and methods used to model the 3D objects. Were some materials better for some objects? Which were the easiest to use? Which were harder to use? Which material did the students enjoy use the most? |

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| * View the Powerpoint “3D Objects Around the World”, featuring famous landmarks.      * A variety of other geometric construction materials, including blocks, folding shapes, tiles, cubes and straws should be provided to students to allow them to engage with a variety of materials to represent 3D objects. These can be used to create samples for the portfolio assessment task. | LEARNING SEQUENCEExtensionS2 | * Students use centicubes, MAB minis, Lego or similar to create a variety of more complex models of 3D objects from diagrams or pictures. |
| **EVALUATION & REFLECTION** | **Student Engagement:** **Achievement of Outcomes:**  **Resources:** **Follow Up:** |