**MATHEMATICS STAGE 2**

**TEACHING AND LEARNING OVERVIEW**

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| TERM:  | WEEK: 3 | STRAND: Measurement and Geometry | **SUB-STRAND:** 3D Space 1 | **WORKING MATHEMATICALLY:** MA2-1WM MA2-3WM  |
| OUTCOMES: MA2-14MG  | **Makes, compares, sketches and names 3D objects, including prisms, pyramids, cylinders, cones and spheres, and describes their features.**  |
| **CONTENT:**  |  **Make models of 3D objects and describe key features.*** Deconstruct everyday packages that are prisms (including cubes) to create nets, eg cut up tissue boxes
* Investigate, make and identify the variety of nets that can be used to create a particular prism, such as the variety of nets that can be used to make a cube.
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| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | **Pre-Assessment:** Children are put into groups and sort 3D shapes into categories. ie, pyramids, prisms. Children to discuss and identify features of shapes. Present a variety of objects. Children select three objects and write all they know about them. Teacher to construct a marking rubric and distribute to students to look at prior to assessment. ie three to four days.  |
| WARM UP / DRILL |

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| **Blindfold** - Students handle and discuss geometric models or everyday examples of 3D objects and count the faces, edges and corners. Students with the most correct win. (Can be played like Celebrity Heads - change to Celebrity Shapes).  |

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| 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
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| RESOURCES | Collection of various everyday objects such as tissue boxes, cereal, round tubs of margarine, etc.Collection of various nets of 3D shapes. <https://www.google.com.au/search?q=nets+of+3d+shapes+worksheets+free&biw=1252&bih=581&tbm=isch&tbo=u&source=univ&sa=X&> |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES |
| Explicitly communicate lesson outcomes and expectations.* **Define and reinforce metalanguage used in the unit while teaching.** object, shape, size, curved, flat, pointy, round, roll, slide, stack , cone, cube, cylinder, sphere, prism, surface, flat surface, curved surface, face, edge and vertex
* **Complete the pre-test.**
* **Revise the name of 3D objects** and teach and review the properties of each shape.
* **Explicitly teach 3D objects**

Present a variety of objects. Children select three objects and write all they know about them. Teacher to construct a marking rubric and distribute to students to look at prior to assessment. ie three to four days.

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| * **Nets**

Students make and open a variety of 3D objects and their nets to see what an object looks like flat.  |

 | LEARNING SEQUENCERemediationS1 or Early S2 | Collect a selection of everyday containers like tissue boxes, Pringles cylinder etc. and display on a table. Have models of 3D objects and 2D shapes set up with the containers and have students look at and identify similarities and differences.Investigation: Students come up with a method of sorting shapes into groups and give reasons for their placement. (Teacher support may be needed.) |
| LEARNING SEQUENCES2 |

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| * **Nets Lesson:** Refer to lesson on ‘Teaching Space and Geometry CD ROM’ - Making A Net.
* Each student needs an empty box, i.e. cereal, toothpaste, flour or biscuit. Ask students to carefully open out their box by tearing or cutting along the edges. Have each student flatten their box into its net. Discuss and compare.
* Students trace around the net, discuss the shape and sides of the traced shape. Write about findings. Students fold the net back into a box again. Glue their box beside its traced net and display work.
* **Investigation:** - Nets

<https://www.google.com.au/search?q=nets+of+3d+shapes+worksheets+free&biw=1252&bih=581&tbm=isch&tbo=u&source=univ&sa=X&>* **Assessment**: Students record their learning in a reflection journal or whole class / partner reflection on nets.
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| LEARNING SEQUENCEExtension Late S2 or Early S3 |

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| * **Constructing Prisms:** Students build and stack attribute blocks, books or pattern blocks to develop the idea of a prism as an object having a consistent cross-section. Students can also construct models from plasticine, playdough, clay and polydrons copied from models provided by the teacher. Sets of prisms can then be built up. Students can informally compare attributes such as height, width, length and number of faces. Display a variety of pyramids and ask children what they know about these objects?
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| * **Points of View:** Ask students to sit at a table in pairs facing each other with a variety of objects arranged between them. Each student takes a turn at describing what they can see from their position. They can sketch what they see and write about it. The students, still in pairs, then move a little way around the table and repeat this activity
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| **EVALUATION & REFLECTION** | **Student Engagement:** **Achievement of Outcomes:****Resources:** **Follow Up:** |