**MATHEMATICS STAGE 1**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 1 | STRAND: Space and Geometry | **SUB-STRAND:** 3D Space 1 | **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:** | | **Recognise and classify familiar 3D objects, using obvious features**   * Manipulate and describe familiar three-dimensional objects, including cones, cubes, cylinders, spheres and prisms * Identify and name familiar three-dimensional objects, including cones, cubes, cylinders, spheres and prisms, from a collection of everyday objects * Recognise familiar three-dimensional objects from pictures and photographs, and in the environment | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | **Pre-Assessment**  Give students an assortment of 3D objects and invite them to sort them as they wish.  Observe how the students sort them and ask them to explain their sorting. | | |
| WARM UP / DRILL | | Sort a variety of geometric 3D objects in a number of ways, eg colour size, roll or stack, faces, pointy, curved or flat surfaces, etc. Discuss the ways the students sort the objects. | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | | I have a 3D object that has lots of corners. What could my object be? | | |
| 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 “real” 3D objects, e.g. cereal boxes, cans of food, 3D object bingo game (From TeachThis.com.au or twinkl.co.uk), cameras (or other device for taking photographs), maths workbooks, worksheet from Maths Tracks for each student | | |

**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 – mathematical names for 3D objects, including cone, cube, cylinder, prism and sphere.Review the difference between 3D objects and 2D shapes by exploring the concept that a 3D object can be picked up whereas a 2D shape can be seen but not picked up. The first 1:30 of the following video may be helpful. <http://www.youtube.com/watch?v=TAHhDmmhHgQ>. Provide students with a collection of familiar 3D objects and containers. In small groups, students sort the objects by placing them into containers. Students describe the groups using everyday language and some mathematical language.Watch the video <http://www.youtube.com/watch?v=2cg-Uc556-Q> as a class, then discuss the names of the shapes.Use the learning object “Shapes and Design in Nature” from the Sites2See website from Centre for Learning Innovation to explore 3D objects in the environment and nature. <https://portalsrvs.det.nsw.edu.au/LRRView/13231/> | LEARNING SEQUENCERemediationES1 or Early S1 | * From a limited selection of shapes, ask students to group like objects together, e.g. spheres and prisms. Expand the selection of shapes as students become more confident. |
| LEARNING SEQUENCES1 | * Students collect and match a range of everyday items with 3D objects. Items can be used to create a class display. * In small groups, student play 3D Object Bingo for example, from TeachThis.com.au or twinkl.co.uk * In pairs, students play “Identifying the 3D object” activity from Using Maths Tracks Stage 1A – 3D Space 1 from TaLe      * **Investigation:** Use digital cameras to photograph 3D objects around the classroom and school. Use these to create a wall display. Alternatively, students cut and paste pictures from magazines and catalogues and group them according to the type of 3D object they resemble. Groups of pictures can be pasted in their books. * **Assessment:** Students complete Student sheet 1 from Using Maths Tracks Stage 1A– 3D Space 1. * Class discussion to reflect on which shapes the students identified the most in the environment. Which shapes did they see the least? Discuss possible reasons for why this might be the case. |
| LEARNING SEQUENCEExtension S2 | * Provide a broader selection of shapes for students to sort, including a variety of prisms and pyramids. Discuss how to tell the difference between a prism and a pyramid. What do all prisms have in common? What do all pyramids have in common? * Provide students with pictures from the built environment where more than one 3D object would be used to create it. Ask them to describe what shapes could be used to make them. |
| **EVALUATION & REFLECTION** | **Student Engagement:** **Achievement of Outcomes:**  **Resources:** **Follow Up:** |