**MATHEMATICS STAGE 1**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: | 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**   * Recognise that three-dimensional objects look different from different vantage points * Identify cones, cubes, cylinders and prisms when drawn in different orientations | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | **Pre-Assessment**  Hold a variety of 3D objects for the students to see. Invite them to name the object. Do students use the names of 2D shapes to name the objects? Do they use everyday language to name them as a 3D object eg, ball, block, box, or do they use mathematical terms? | | |
| WARM UP / DRILL | | Students sit in small groups of 4 to 5 students, each holding a different 3D object. Teacher calls out the name of a 3D object using its mathematical name and the student in the group with that object holds it up for all to see. | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | | I have a 3D object but I can only see one face. The face I can see is a circle. What 3D object might I have? | | |
| 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, eg cereal boxes, cans of food, cameras (or other device for taking photographs), maths workbooks, sponges for printing, paint, pattern blocks, pencils | | |

**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, sphere, prism, surface, flat surface, curved surface and face.Review the everyday and mathematical names of 3D objects. Watch the video <http://www.youtube.com/watch?v=2cg-Uc556-Q> to help if needed.Ask students to pick up and hold various 3D objects. Discuss what 2D shape they see. Ask the students to turn the object in their hands. Does it still look the same? Pair with another student and talk about what it looks like from different viewpoints. Share responses with the class.Hold a pattern block for the students to see. What is it called? (Students may use the name of the 2D shape of the face to name the object.) Turn the object to display a different face and ask the students to name it now. Introduce the term *face*. | LEARNING SEQUENCERemediationES1 or Early S1 | * For students who require consolidation of recognising the same object when placed differently, completing the online “Three-Dimensional Shapes In The Environment” yellow level activity on Studyladder may be helpful ([www.studyladder.com.au](http://www.studyladder.com.au) - free, log in required) |
| LEARNING SEQUENCES1 | * Students draw a selection of 3D objects from different views in their workbooks. This can be done with both real-life objects, such as cans of food and cereal boxes, as well as geometrical shapes. * With a partner, students play “Match the View game” from Using Maths Tracks Stage 1B – 3D Space 2 from TaLe      * **Investigation:** Working in pairs, students are given a 3D object and asked to take photographs of their object from different vantage points. Students create a display of their object, labelling and describing the different shapes that they can see. * **Assessment**: Students present their photographs and create a display from their investigation. Students may present to a small group or to the class. * Class discussion of the results of the students’ investigations, including similarities and differences between some of the different 3D objects that were chosen. Were there some objects that looked similar to others from one viewpoint but different from another? How does this reinforce the differences between 2D shapes and 3D objects? |

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| Display a prism-shaped sponge to the class and explain it will be used to print the faces of the object. Students will use paint to print all of the faces of the prism.Students trace around each of the faces on pattern blocks in order to see and record the different faces | LEARNING SEQUENCEExtensionS2 | * Use folding shapes to explore the nets of 3D objects. * Present students with the aerial view of an object. Explore all the possibilities of what it could be. * Use centicubes, MAB minis, Lego or similar to create models of more complex structures. Photograph these objects from different perspectives. Discuss the differences between the different viewpoints. |
| **EVALUATION & REFLECTION** | **Student Engagement:** **Achievement of Outcomes:**  **Resources:** **Follow Up:** |