**MATHEMATICS STAGE 1**

**TEACHING AND LEARNING OVERVIEW**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 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**   * select an object from a description of its features, eg. find an object with six square faces * sort familiar three-dimensional objects according to obvious features, eg “all these objects have curved surfaces” * select and name a familiar three-dimensional from a description of its features, eg find an object with six square faces | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | **Pre-assessment**  Provide students with a selection of geometric 3D objects. Teacher asks the students to choose and hold up an object with a specific characteristic, e.g. an object that rolls, stacks, has a point, flat surface, curved surface, square/triangular/rectangular face. | | |
| WARM UP / DRILL | | Students have a range of 3D objects in front of them. Teacher calls out the name of a 3D object and students select an object and hold it up for the teacher to see. Teacher confirms the answer by describing the features of the selected object. | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | | I have a 3D object that I can’t see. I can feel that it has both flat and curved surfaces. What object could 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, bag for hiding objects, worksheet from Maths Tracks for each student, video recorder or other device for recording, name cards of 3D objects for “Celebrity Head” | | |

**TEACHING AND LEARNING EXPERIENCES**

|  |  |  |
| --- | --- | --- |
| 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.Revise the names of 3D objects, including cone, cube, cylinder, sphere and prism.Teacher places a 3D object in a bag. Student is invited to feel the object in the bag without looking. The student will talk to the class about what features they can identify by feeling the object, e.g. number of faces, flat / curved surfaces or shape of faces. Using suggestions from the class, student will try to identify the object.  * Use the 3D Shifting Shapes learning object to identify 3D objects by only revealing part of the object at a time - <http://www.ictgames.com/Y2shape.html> | LEARNING SEQUENCERemediationES1 or Early S1 | * For the investigation task, provide students with specific attributes by which to sort their objects, e.g. do they stack, roll, slide etc. |
| LEARNING SEQUENCES1 | * Students will work independently to complete the “Classify Three-Dimensional Objects” online activities 1 and 2 on the Studyladder website. ([www.studyladder.com.au](http://www.studyladder.com.au) - free resource) * Students will work in small groups to video themselves describing the properties of some 3D objects. * Complete the worksheet for Activity 5 from Using Maths Tracks Stage 1A – 3D Space 2 from TaLe      * **Investigation**: Students are presented with a selection of geometrical 3D objects. Working in pairs, students sort the shapes and describe to the teacher how they sorted the objects. * **Assessment:** Teacher observation and discussion with students during the investigation. Photographing students’ work and scribing their reasoning to provide a useful work sample if required. * Teacher asks the students to repeat the process, sorting their objects in a different way. The teacher may need to offer guidance on possibilities to direct student responses to sort by attributes and features. * Students will report to the class about one of the ways they sorted their objects. Other students can respond with feedback about each way discussed. Were there some ways lots of students chose to sort the objects? Which methods focussed on the features of the objects such as number of faces, or flat and curved surfaces? |

|  |  |  |
| --- | --- | --- |
| Play “Celebrity Head” with the class. Students try to guess which 3D object they are based on attributes and features. | LEARNING SEQUENCEExtensionS2 | * For the investigation task, provide additional 3D objects for the students to sort, including prisms, pyramids and truncated shapes. Discuss how these would fit in with how they sorted their objects. |
| **EVALUATION & REFLECTION** | **Student engagement:** **Achievement of Outcomes:**  **Resources:** **Follow up:** |