**MATHEMATICS STAGE 2**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 4 | 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.**  Uses appropriate terminology to describe, and symbols to represent, mathematical ideas. (WM1)  Checks the accuracy of a statement and explains the reasoning used.(WM3) | | |
| **CONTENT:** | | **Make models of 3D objects and describe key features.**   * Recognise that a net requires each face to be connected to at least one other face (Reasoning) * distinguish between flat nets, which are 2D and objects created from nets which are 3D ( Communicating, Reasoning) | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | **Pre-Assessment:** **Classification**  Students sort models, everyday objects into prisms, pyramids and those that are neither.  Use marking rubric and distribute to students to look at prior to assessment. ie three to four days.  <http://rubistar.4teachers.org/index.php?screen=ShowRubric&rubric_id=1024216&> | | |
| WARM UP / DRILL | | |  | | --- | | **What Shape Am I?**  Students describe an object to the class, e.g. I have 4 triangular faces and 4 corners. The class takes turns to guess the object. The student who guesses correctly then chooses another object. | |  | | | |
| 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 |
| RESOURCES | | Various nets, everyday objects and those that have been computer constructed | | |

**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 pre-test**.   Explain activity and make accommodations and adjustments   * **Explicitly teach 3D objects** by modelling whole class then allowing students opportunities to play games, manipulate, sort and make 3D objects from different materials. * **Make 3D objects from nets** discuss criteria and classification of the object and those that can stack.   Make a tall castle out of 3D objects. | LEARNING SEQUENCERemediationS1 or Early S2 | |  | | --- | | * **Students are to examine a range of commercial packaging** and give reasons for some being more commonly used. Students design their own package and justify the reasons for their choices. * **Isometric paper:** Students draw different views of an object on isometric or grid paper. Students then swap drawings and interpret their partner’s drawing to make a model of the 3D object using connecting cubes. | |
| LEARNING SEQUENCES2 | |  |  | | --- | --- | | |  | | --- | | * **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 * **Investigation: The Great Castle Competition:** Using the objects created above, hold a class competition to see who can build the most innovative castle. Encourage the children to use at least one of every 3D shape in their building. Children can work alone or in groups depending on availability of blocks. |  * **Assessment**: Present a variety of objects. Children select three objects and write all they know about them. | |
| LEARNING SEQUENCEExtensionLate S2 or Early S3 | |  | | --- | | * Collect a variety of everyday objects and open up the nets carefully. Identify the shapes of the faces etc. * Shape Maker : Blocker-Years 3-4 TaLe Reference Number: L1058 Students select an object from a bank of simple 3D objects. They discover the method of re-creating this object by choosing from a bank of 2D shapes and then applying an action (spin or extrude) to it. * Shape Maker : Stacker –Years 3-4 TaLe Reference Number: L588 | |  | |
| **EVALUATION & REFLECTION** | **Student Engagement:** **Achievement of Outcomes:**  **Resources:** **Follow Up:** |