**MATHEMATICS STAGE 1**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 1 | STRAND: Measurement and Geometry | **SUB-STRAND: Volume and Capacity 1** | **WORKING MATHEMATICALLY: MA1-1WM, MA1-3WM** |
| **OUTCOMES: MA1-11MG** | | **Measures, records, compares and estimates volumes and capacities using uniform informal units.** | | |
| **CONTENT:** | | **Measure and compare the capacities of pairs of objects using uniform informal units (ACMMG019)**   * Measure the volume of a container by filling the container with uniform informal units and counting the number of units used. e.g. the number of blocks a box can hold. * Devise and explain strategies for packing and counting units to fill a box, e.g. packing in layers and ensuring that there are no gaps between units. (Communicating, Problem Solving) * Explain that if there are gaps when packing and stacking this will affect the accuracy of measuring the volume.(Communicating, Reasoning) * Record volumes by referring to the number and type of uniform informal unit used. | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | * Worksheet- Present three different sized containers and ask students to order them. Ask students what property they used to order the containers (base, height, volume). | | |
| WARM UP / DRILL | | * Counting by twos, threes, fives and tens. | | |
| 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 | | Metalanguage signage and environmental poster display, IWB visual presentation, Skwirk, boxes, plastic containers, blocks, paper and pencils for recording, sand, rice, marbles, beans, **Teaching Measurement Early Stage 1/ Stage 1** Volume and Capacity pg 98-99 | | |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES | |
| * Step 1   Introduce the activity as measuring the capacity of containers using blocks.  Discuss the structure of packing. Teacher model the use of “rows”, “columns” and “layers”. Remind students that layer patterns will look like area grids. Whole class discuss and count the blocks in one layer. Discuss how to find the total number of blocks.  * Questioning   If I want to measure the capacity of this container by using the blocks, how should I put them in?  How many blocks have we got now? How many more do you think we will need? Is there a quick way of counting the blocks we use?   * Step 2   •Students work with a partner or small group to choose units, then pack these into their box.  •Students draw their packed box and write the total number of blocks used to measure the capacity. Students record how they packed the box.  Check that students:  • Pack the blocks methodically.  • Understand that there should be no gaps.  • Understand how to count: multiplication, skip counting or stress counting. | LEARNING SEQUENCERemediationES1 | * **How Could I Measure?**   Students suggest different materials that could be used to measure different containers, e.g. sand, water for cylindrical containers, blocks for rectangular boxes. |
| LEARNING SEQUENCES1 | **Volume** refers to the amount of space occupied by an object or substance.  **Capacity** refers to the amount a container can hold.   * Fill the box   Students pack boxes with blocks. Then they count the blocks and discuss, draw and write about the structure of their packing. Emphasise layers, rows and columns (boxes may have been packed in horizontal or vertical layers).  Students should:  1. Pack a box with blocks and count the blocks; structure the packing in layers.  2. State or record the number and type of units used to measure volume and capacity.  3. Suggest appropriate units and explain why one is better than another.   * Investigation: Packing   Students investigate the capacity of various containers by packing with informal units and counting the number of units used. Encourage students to estimate capacity first.   1. A box with pencils. 2. A carton with crayon packets. 3. A packet with blocks. 4. A cup with marbles.  * Assessment-Matching suitable boxes to a stack of blocks. State how many layers and how many blocks in each layer. E.g. 2 layers of 9 blocks = 18 blocks |

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| * Step 3   • Discuss the suitability of the blocks, compared with lima beans or marbles.  Discussion  Were the blocks good for measuring capacity of the boxes? Why? How did you count the blocks? Was there an easy way to draw the pattern of the layers? | LEARNING SEQUENCEExtensionEarly S2 | * Write five statements about the volume and capacity of the containers you have measured. |
| **EVALUATION & REFLECTION** | Student engagement: Achievement of outcomes:  Resources: Follow up: |

* All assessment tasks should be written in **red** and planning should be based around developing the skills to complete that task
* Assessment rubrics or marking scale should be considered.