**MATHEMATICS STAGE 1**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 1 | STRAND: MEASUREMENT & GEOMETRY | **SUB-STRAND: VOLUME AND CAPACITY 2** | **WORKING MATHEMATICALLY:**  **MA1-1WM, MA1-2WM, MA1-3WM** |
| OUTCOMES: MA1 – 11MG | | **Measures, records, compares and estimates volumes and capacities using uniform informal units** | | |
| **CONTENT:** | | **Compare and order several objects based on volume and capacity using appropriate uniform informal units (ACMMG037)**   * Make and use a measuring device for capacity in uniform informal units * Compare and order the capacities of two or more containers by measuring each container in uniform informal units * Record volume and capacity comparisons informally using drawings, numerals and words, and by referring to the uniform informal unit used | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | * Ask students to order the following containers from smallest to largest in terms of their capacity: milk carton, cup, egg cup. | | |
| WARM UP / DRILL | | * Number sentences – write 3 numbers between 0 and 9 on the board and ask students to use the adding and subtracting to make as many different number sentences as possible eg., 2,3,4 – 2+3=5, 4-3=1, 2+3+4=9. Use a timer for this activity. * Blockbusters – 2 dice, counters, number grid – throw the dice and make a number by adding or subtracting the 2 numbers shown on the dice and place a counter on the grid | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | | Charlie has a 1 litre container of milk and Jessica has a 2 litre container of milk. Which container would have the largest capacity? | | |
| 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 | | Milk/juice containers, rice, sand, marbles, macaroni, centi-cubes, lima beans, funnels, cups, egg cups, tablespoons, sign “Takes up more room than”, work books.  Teaching Measurement ES1 and Stage 1 p. 102-103, p. 88. | | |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES | |
| **Capacity refers to the amount a container can hold.**   * **Discuss/revise** terminology of measure, estimate, and capacity. * **Introduce** the activity of **calibration a bottle** and reinforce terms such as capacity. * **Model calibrating a bottle** – demonstrate inserting a funnel, pouring water from a cup and marking levels. * **Introduce** the activity of **comparing and ordering containers** explain terms estimation and capacity. * **Model constructing a cylinder** from cardboard. * **Instruct** students to make a small and large cylinder in pairs, estimate capacity, fill with rice, compare and order, as well as recording their observations   . | LEARNING SEQUENCERemediationES1 | * Students to choose containers and materials for packing and pouring, so that each container is full (filled to the brim). Suggested materials: sand, water, play dough. Experiment with packing small containers or moulds with sand or play dough and then tipping out. Compare the moulded form to the original container. |
| LEARNING SEQUENCES1 | * **Investigation: Calibrating Bottles.** Calibrate a large bottle by adding cups of water. Each time a cup of water is poured into the container the new level is to be marked by the student with a felt marker. Repeat the process with sand, and marbles using a different coloured felt marker for each. Students discuss actions and results, including describing any differences that the filling material made to the level. * **Investigation: Comparing and ordering containers.** In pairs students are asked to construct a small and large cylinder that will hold rice from a piece of cardboard. Students are to compare containers and estimate which one will hold the most and record their estimates. Using rice each pair is to fill their cylinders and count the number of units used (ie., cups, egg cups, tablespoons) and compare the capacity of each container. Then they order them from ‘holds the most’ to ‘holds the least’. Students are to check their results against their estimates. This activity can be repeated with different filing material such as sand, lima beans, macaroni, centi-cubes etc. * Assessment: Students are to record their results by drawing their cylinders and explaining their results. |
| LEARNING SEQUENCEExtensionEarly S2 | * **Compare the capacity** of two rectangular containers using the same standard units and construct a graph or table to display their results. Suitable units are cubes, small sultana packets, and ‘popper’ cartons. * **Measure capacity** (Capacity Jug) – Students to play the computer game at   <http://www.iboard.co.uk/activity/Measure-Capacity-Simple-114> |
| **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.