**MATHEMATICS STAGE 2**

**TEACHING AND LEARNING OVERVIEW**

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| TERM:  | WEEK: 6 | STRAND: Measurement and Geometry | **SUB-STRAND: Volume and Capacity 2** | **WORKING MATHEMATICALLY:** **MA2 – 1WM** |
| OUTCOMES: MA2 – 11MG | **Measures, records, compare and estimates volumes and capacities using litres, millilitres and cubic centimetres.** |
| **CONTENT:**  | **Use scaled instruments to measure and compare capacities (ACMMG084)*** use the millilitre as a unit to measure volume and capacity, using a device calibrated in millilitres, eg place a measuring cylinder under a dripping tap to measure the volume of water lost over a particular period of time E
* record volumes and capacities using the abbreviation for millilitres (mL) http://syllabus.bos.nsw.edu.au/wsimages/cca/l.png
 |
| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | * Name everyday 1 litre containers
* Estimate the volume of partially filled 1 litre containers from the information on the label
* Count the number of cubic centimetres in a 3D shape and label.
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| WARM UP / DRILL | * IWB - **Millilitres and litres: Activity 2**

 <http://www.studyladder.com.au/resources/teacher/mathematics?section=40> |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  | * Ben removed 450ml of water from his fish bowl. If he left 125ml of water in the fish bowl how much water did it have to begin with?
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| 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
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| RESOURCES | IWB, measuring device calibrated in multiples of 100, containers with different capacities and volumes, cubic centimetre blocks and water. (Page 41- Signpost Maths Assessment Middle Primary). |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES |
| Explicitly communicate lesson outcomes: Students should be able to record volumes and capacities using the abbreviation for millilitres (mL)* **Teach and review**

The abbreviation for millilitres is mLThe formal unit allows for easier and more accurate communication of measures. Fluids are commonly measured in litres and millilitres.Capacity refers to the amount a container can hold, and can be measured in millilitres (mL) and/or litres (L). There are 1000 mL in 1 L.Volume is the amount of space an object occupies. It can be measured in cubic centimetres (cm2) and cubic metres (m2).* **Define and reinforce metalanguage:** capacity, container, volume, measure, estimate, full, empty, liquid.
 | LEARNING SEQUENCERemediationS1 or Early S2 | * In small groups, students fill an ice cream container with plastic cubes by each of two methods:
	+ picking up the cubes in handfuls and dumping them into the container
	+ packing the cubes into the container by placing them neatly next to each other and building up the layers.
* Students record the number of cubes used for each method.
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| LEARNING SEQUENCES2 | * **Brainstorming:** Ask students how in groups of four “how could they measure the volume and capacity of different everyday containers to the nearest 100mL?” Ask students to discuss how they will decide to round up or down to the nearest 100mL, and then model.
* **Kinaesthetic challenge**: Students estimate, measure and record how many 100 mL cups or scoops are required to fill a litre. Students repeat this process with another small container, using the previous measure to assist in estimating before measuring. Students calculate the capacity of their measuring cup by dividing 1000 mL by the number of cupfuls in one litre, using a calculator.
* **Investigation**: Place a measuring cylinder under a dripping tap and record the volume of water lost over a 1 hour period of time. Observe the measuring cylinder during 1 hour intervals throughout the day recording the volume of water lost from the dripping tap.
* **Assessment –** Students choose which container they estimate to will have a capacity of 1L.
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| LEARNING SEQUENCEExtension Late S2 or Early S3 | * **Candy Box Volumes:** students are shown images of ‘candy boxes’. Students discuss which candy box they would buy (A, B or C)? All candy boxes hold the exact same amount of candy. Students realise that the size of an object can sometimes be misleading.
* **How big is a cubic metre?** <http://www.scootle.edu.au/ec/viewing/L163/index.html>
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| **EVALUATION & REFLECTION** | Where the students engaged? Where resources appropriate? Did students achieve outcomes? What follow up is recommended? |

* 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.