**MATHEMATICS STAGE 2**

**TEACHING AND LEARNING OVERVIEW**

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| TERM:  | WEEK: 1 | STRAND: Measurement and Geometry | **SUB-STRAND: Volume and Capacity 1** | **WORKING MATHEMATICALLY:** **MA2-1WM and MA2-3WM** |
| OUTCOMES: MA2-11MG  |  **Measures, records, compares and estimates volumes and capacities using litres, millilitres and cubic centimetres** |
| **CONTENT:**  | **Measure, order and compare objects using familiar metric units of capacity*** Recognise the need for formal units to measure volume and capacity
* Explain the need for formal units to measure volume and capacity (Communicating, Reasoning)
* Use the litre as a unit to measure volumes and capacities to the nearest litre.
* Relate the litre to familiar everyday containers e.g. milk cartons
* Recognise that one litre containers can be a variety of shapes

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| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | * Display pictures showing different types of containers and ask students what we should use to measure them (eg litres, kilometres, centimetres etc)
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| WARM UP / DRILL | * Watch and answer questions on capacity power point and students in pairs write down the answers for the questions.(Capacity Quiz 1: [www.australiancurriculumlessons.com.au-mathematics](http://www.australiancurriculumlessons.com.au-mathematics) lessons**.**
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| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  | The volume of a bottle of water is 7 litres. What is the volume of 6 bottles? |
| 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 | Blank Measuring Jug worksheet, Capacity Quiz 1 (PowerPoint), Containers, Measuring Jug, Water, Plastic cups, markers, laptops/ipads |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES |
| Explicitly communicate lesson outcomes and work quality* Watch the you tube ‘Measure and estimate liquid volumes and masses of object’ which discusses and looks at the types of ways we should measure containers etc.
* Teach and review the use of uniform informal units and compare the capacities of two or more containers.
* Introduce, define and reinforce metalanguage used in the unit e.g. litre, millilitre, kilolitres, cubic centimetres etc.
* Study Ladder website – answer the questions about litres and millilitres by completing the interactive quiz

 | LEARNING SEQUENCERemediationS1 or Early S2 | * Review appropriate uniform informal units to measure capacities of containers
* Compare and investigate capacities of two or more containers using uniform

 informal units* Recognise that containers of different shapes may have the same capacity
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| LEARNING SEQUENCES2 | * **What is capacity?** I have container and want to find its capacity. What does capacity mean? Find capacity of a range of different containers. Order from smallest to largest. Display measuring container on board and draw a range of gradients on the jug. Practice reading and changing the gradients.
* **Investigation - Estimate capacity.** Display a container and students estimate how much it may hold. Model how to find the capacity of each container using a measuring jug. Students use unmarked containers and will estimate in their workbook. They use measuring jugs to find capacity and calculate the difference. Then play the game <http://www.bgfl.org/bgfl/custom/resources_ftp/client_ftp/ks2/maths/measures/index.htm>
* **Worksheet**: Students complete the activities that require them to read the scale on the measuring jugs and complete the sentence. Could also use this as an assessment.
* **Investigation - Millilitres.** Students recognise and find containers that hold under 100mls, around 500mls and over 1 litre. Each child has a plastic cup, which they convert into a measuring cup. This will be modelled to the students. Students will then hunt around the classroom and they will find a container that will hold over 1 litre, around 500mls and under 100mls. Students will record this onto a pages document and will take a photo of them measuring containers.

Assessment: Students create a mini PowerPoint or other digital presentation that demonstrated their understanding of capacity. They may take snapshots of their completed work, or do extra research on capacity. Once completed they can either present it to the class or a group of students. |

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|  | LEARNING SEQUENCEExtension Late S2 or Early S3 | * Students discuss the conversion from millilitres to litres and litres to millilitres**.**
* Students are put into relay teams, the students will work together using a sponge to move 1000ml of water from one container to the other. The aim of the activity is to be as accurate as possible and conserve the largest amount of water. This is not a race or timed activity but rather a game of precision and accuracy. After all water has been moved from the original bowl, the teams will measure the water left, calculate the water lost and compare the teams results using scaled measurement tools.
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| **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.