**MATHEMATICS STAGE 2**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 4 | 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:** | | **Compare objects using familiar metric units of volume:**   * Construct three dimensional objects using cubic centimetre blocks and count the blocks to determine the volumes of the objects * Devise and explain strategies for counting blocks (Communicating, Problem solving) * Record volumes using the abbreviation for cubic centimetres (cm3) * Compare the volumes of two or more objects made from cubic centimetre blocks by counting blocks * Distinguish between mass and volume eg ‘This stone is heavier than the ball but it takes up less space’ | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | * Students make a range of different prisms using unifix blocks. Then students in small groups order them in size from smallest to largest | | |
| WARM UP / DRILL | | * In pairs, students take turns to make a specific prism using a certain number of blocks that their partner tells them eg. make a prism using 10unifix blocks | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | | If the girl made a prism using 20 cubic centicubes how many cubic centicubes would she need to make 3 of the same prisms? | | |
| 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 | | * Unifix blocks, centicubes, stop watch, newspaper, masking tape, interactive game | | |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES | |
| Explicitly communicate lesson outcomes and work quality  * **Introduce, define and reinforce metalanguage used in the unit eg litre, millilitre, kilolitres, cubic centimetres etc** * **Revise what it means to estimate. How do you estimate? What does it mean?** * **Discuss what it means to compare. What might you find out?** | LEARNING SEQUENCERemediationS1 or Early S2 | * Record volumes by referring to the number and type of uniform informal unit used * Predict the larger volume of two or more containers and check by measuring using uniform informal units |
| LEARNING SEQUENCES2 | * Students collect a handful of centicubes and a stopwatch. Within a time limit of 20 seconds the students have to construct the biggest prism that they can. They report back to the class answering the questions:   + How many centicubes did you use?   + How high is your prism?   + How wide is your prism?   + How long is your prism?   + What was the volume of your prism in cubic centimetres? * Investigation: As a class the students construct a cubic metre from newspaper and masking tape. Explore the concept of cubic metres.   + Estimate how many 3rd grade students will fit in a cubic metre   + Test how many 3rd grade students will fit in a cubic metre * Compare the cubic metre and cubic centimetre. Look at how big the cubic metre is and put a cubic centimetre next to it. Discuss with the students:   + How many cubic centimetres do you think will fit in a cubic metre?   + What strategies could you use to work out how many cubic centimetres you would need?   + Record into your workbook how you could record these volumes? * Individually play the interactive game named ‘Count the cubes’   [www.primarygames.com/math/countthecubes/](http://www.primarygames.com/math/countthecubes/) |

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|  | LEARNING SEQUENCEExtensionLate S2 or Early S3 | * Being able to recognise that models with different appearances may have the same volume - Using the formula length x breadth x height |
| 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.