**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’
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| 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
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| 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
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| 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
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| RESOURCES | * Unifix blocks, centicubes, stop watch, newspaper, masking tape, interactive game
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**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
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| 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 SEQUENCEExtension Late 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
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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.