**MATHEMATICS STAGE 2**

**TEACHING AND LEARNING OVERVIEW**

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| TERM:  | WEEK: 3 | STRAND: Measurement and Geometry | **SUB-STRAND:** **Volume and Capacity 1** | **WORKING MATHEMATICALLY:** **MA2-3WM and MA2-1WM** |
| 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:*** Recognise the advantages of using a cube as a unit when packing and stacking
* Use the cubic centimetre as a unit to measure volumes
* Pack small containers with cubic centimetre blocks and describe packing in terms of layers eg 2 layers of 10 cubic centimetre blocks
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| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | * Watch and complete the 10 tasks on volume on Study Ladder. In pairs, write down the answers to the questions
	+ study ladder – volume of objects – informal units
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| WARM UP / DRILL | * Children are given a specific number of unifix cubes and teacher says a specifc number and they need to build an object using the specific amount of blocks required
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| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  | The boy was making a prism using 25 cubic centicubes. So far he had used 18 cubic centicubes. How many more does the boy need to use? |
| 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 | * Variety of small boxes, centicubes, unifix blocks, 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
* Discuss what it means to compare. What might you find out?
* Revise what it means by estimate. How do you estimate? What does it mean?
 | LEARNING SEQUENCERemediationS1 or Early S2 | * Knowing and understanding what a cubic centimetre looks like
* Pack cubic units (eg blocks) into rectangular containers so that there are no gaps
* Explain a strategy used for estimating a volume
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| LEARNING SEQUENCES2 | * Collect a variety of small boxes eg match boxes, chalk boxes, ‘popper’ cartons. Students discuss the strategies they would use to estimate the number of base 10 cubes that would be needed to fill the box.
	+ Students write their estimates in a table and then check their estimate by packing the boxes with cubes. Discuss with the class if the estimated volumes were too small, too large or very close.
	+ What might the student change when estimating to be closer to the actual answer? Discuss and compare different strategies as a class
* Use 24 centicubes to build as many rectangular prisms as possible with a volume of 24 cubic units. Record their dimensions into their workbook
* Using unifix cubes make a number of different prisms using a range of different numbered unifix cubes. Students then draw these into their workbooks and write a number sentence to go with their picture eg 2 layers of 6 blocks equals 12 cubic centimetres or 2x6= 12cubic centimetres
* Volumes Shape Game: Students complete the volumes shape game individually

[www.sheppardsoftware.com/mathgames/geometry/shapeshoot/volumeshapesshoot.htm](http://www.sheppardsoftware.com/mathgames/geometry/shapeshoot/volumeshapesshoot.htm) |

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|  | LEARNING SEQUENCEExtension Late S2 or Early S3 | * Teaching the students the formula for cubic centimetres - 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.