**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 2 | STRAND:MEASUREMENT AND GEOMETRY | **SUB-STRAND: VOLUME & CAPACITY 2** | **WORKING MATHEMATICALLY:**  **MA3-1WM** |
| OUTCOMES: MA3-11MG | | **Selects and uses the appropriate unit to estimate, measure and calculate volumes and capacities and converts between units**  **of capacity.** | | |
| **CONTENT:** | | **Connect decimal representations to the metric system.**   * Recognise the equivalence of whole number and decimal representations of measurements of capacity. * Interpret decimal notation for volumes and capacities eg. 8.7L is the same as 8 litres and 700 millilitres * Record volume and capacity using decimal notation to three decimal places eg. 1.275L | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | * Worksheet - matching of decimal litres to litres and millilitres and millilitres alone | | |
| WARM UP / DRILL | | * Drilling of measurement facts concentrating on the place value of numbers eg. How many metres in a kilometre-1000 metres, centimetres in a metre-100 cm, grams in a kilogram-1000 grams. (Concentrating on the place value of each measurement with particular reference to number of zeros giving the measurement value). | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | | A boy had bottles of water. One had 2725mL, a second had 1.45L and the third had 0.155mL. How much water is litres are there in all three containers? | | |
| 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 | | Measuring jugs calibrated in mL and L, paper, access to water, several tables with all round access, measurement charts. | | |

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES-minimum three lessons suggested | |
| Explicitly communicate outcomes of lesson and quality of work.  * **Teach and Review**-the number of millilitres in a litre. The method of converting millilitres to litres by use of repeated 10’s. The function of the decimal point in denoting value in a number. The use of place fillers in numbers eg. 2.100= 2.1, 0.34-demonstrate * **Discussion**-talking about the measuring of capacity involving liquids using millilitres and litres. Developing student led discussion skills in group through observation and investigation. * **Linking** practical work on measuring and comparing millilitres to litres and millilitres and then to decimal litres through practical work-further linking concrete to abstract through the use of repeated 10s multiplication and completing the understanding of 1000 as the basis of all conversions and application to decimal measurement. | LEARNING SEQUENCERemediationS2 or Early S3 | * **REVISE USE OF MEASUREMENT TERMS** * How many millilitres would we need to make a litre? * What does the prefix ‘milli’ mean? * Does ‘milli’ mean thousandth? * We need 1 times 10 times 10 times 10 * 1 times 10 equals 10, times 10 equals 100, times 10 equals 1000 * So we’ll need a thousand millilitres to make a litre |
| LEARNING SEQUENCES3 | * **INVESTIGATION/DISCUSSION** * Here is a measuring jug marked in millilitres and litres * Can you see that we need 1000 millilitres to make a litre? * Let’s measure the capacity of a container in millilitres and litres * What is the capacity of the container? * Is the capacity 1 litre and 250 millilitres? * So could we say we have 1000 millilitres plus another 250 millilitres? * Does that equal 1250 millilitres? – practice with a variety of measurement amount comparing the jug calibrations * Can you express this as a decimal using the number of places in a thousand as your guide-question-how many whole litres-one what remains out of the millilitres 250 (count three places in to give your decimal point position-1.250L * Express your millilitres and litres in a shortened form. Is 8L 700mL the same as 8.700L? How many places do you need after the decimal point? Can you express it as 8.7Land still have the same measurement? * On your worksheet use 1000 to divide millilitres into decimal litres eg 9626mL divided by 1000=9.626L- drill. |
| LEARNING SEQUENCEExtensionEarly S4 | * **REVISE USE OF MEASUREMENT TERMS** * How many millilitres would we need to make a litre? * What does the prefix ‘milli’ mean?- revising previous knowledge as linkage. * Does ‘milli’ mean thousandth? – display as a fraction * We need 1 times 10 times 10 times 10 * 1 times 10 equals 10, times 10 equals 100, times 10 equals 1000 * So we’ll need a thousand millilitres to make a litre. * Worksheet-conversion of millilitres to litres, millilitres to litres and millilitres, millilitres to decimal litres-testing understanding |
| **EVALUATION & REFLECTION** | **Student engagement Achievement of Outcomes**  **Resources Follow-up** |