**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

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| TERM:  | WEEK: 1 | STRAND: Measurement and Geomtery | **SUB-STRAND:** **Length 1** | **WORKING MATHEMATICALLY:** **MA3-1WM, MA3-3WM** |
| OUTCOMES: MA3-9MG | **Selects and uses the appropriate unit and device to measure lengths and distances, calculates perimeters, and converts between units of length** |
| **CONTENT:**  | **Choose appropriate units of measurement for length (ACMMG108)**\* Recognises the need for a formal unit longer than a metre for measuring distances.\* Recognises that there are 1000 metres in one kilometre, i.e. 1000 metres = 1 kilometre\* Describes one metre as one thousandth of a kilometre. |
| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | * Ask students to list or draw places that are a kilometre or more away. Provide examples of places e.g. post office, shopping centre and ask students to list ways they could measure the distances to them.
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| WARM UP / DRILL | * Activity: Students brainstorm lists/illustrations of things that be measured in centimetres, metres and those things/distances that would be too long to measure in metres.
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| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  | My house is 6km from the shop. John’s house is 12km from the shop. How far would I travel if I go to the shop and then John’s house? |
| 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 | Trundle wheelTape measuresMapping worksheet |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES |
| Explicitly communicate lesson outcomes and expectations for work quality.* Revise and define metalanguage used in the unit including explicit teaching of the prefix “kilo” meaning a thousand as in kilometre. 1000 metres = 1 kilometre
* Explicit teaching of use of trundle wheel as measuring device.
* Practise doing conversions between metres and kilometres.
 | LEARNING SEQUENCERemediationS2 or Early S3 | * **Activity:** Students revise a metre as a unit of measurement and devices that can be used to measure a metre. Teacher has them estimate lengths of objects in metres and centimetres and then has students use tape measures and metre rulers to measure objects. Discuss results.
* **Activity:** Students brainstorm distances that might be difficult to measure using tape measures and metre rulers. They suggest other units of measurement which may be more appropriate to use than a metre, e.g. kilometre.
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| LEARNING SEQUENCES3 | * **Activity**: Students discuss the need for a measurement longer than a metre brainstorming distances which would be difficult to measure using a metre, e.g. school to shops, home to Sydney city, Blue Mountains, Wet and Wild or overseas travel. Students suggest alternate measurements e.g. kilometres
* **Activity**: Teacher introduces kilometre as unit of measurement, explicitly teaching the definition of “kilo” as meaning 1000 and a kilometre being equivalent to 1000 metres. Students brainstorm places that are about one kilometre away.
* **Investigation Activity:** Teacher explicitly teaches (or revises) use of trundle wheel as a measurement tool and provides opportunities for students to use device to measure distances e.g. across netball courts, playground.
* **Assessment:** In groups students estimate one kilometre in the playground using cones to mark distance out. They then use trundle wheel to test estimate. Students record reflections in Mathematics journals teacher records observations.
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| LEARNING SEQUENCEExtension Early S4 | * **Activity:** Students asked to brainstorm other measurements starting with “kilo” prefix, e.g. kilogram, kilowatt, kilojoule and attempt to define them.
* **Activity:** Students are asked to estimate parts of a kilometre e.g. 0.5 km, a quarter of a kilometre then measure to check answers using a trundle wheel.
* **Activity:** Students asked to convert measurement from metres to kilometres and kilometres to metres including parts of a kilometre, e.g. 2.5 km = 2500 metres
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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.