**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

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| TERM:  | WEEK: 4 | STRAND: Measurement and Geometry | **SUB-STRAND:** Mass 2 | **WORKING MATHEMATICALLY:** MA3-1WM & MA3-2WM  |
| OUTCOMES: MA3-12MG | **Selects and uses the appropriate unit and device to measure the masses of objects, and converts** **between units of mass**. |
| **CONTENT:**  | **Connect decimal representations to the metric system:*** Recognise the equivalence of whole-number and decimal representations of measurement of mass, e.g. 3kg 250g is the same as 3.25kg
* Interpret decimal notation for masses, e.g. 2.08kg is the same as 2 kilograms and 80 grams
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| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | * Discuss different ways of recording mass e.g. one kilogram/1 kilogram/1 kg/1000 grams/1000g.
* **Matching equivalent mass** - Students can either access an interactive activity or there is a supporting worksheet: <http://www.teachingmeasures.co.uk/menu.html>
1. Students discuss different ways of recohttp://www.schools.nsw.edu.au/learning/7-12assessments/naplan/teachstrategies/yr2011/images/nn_meas_mass_01_01.jpgrding mass. Complete the table to show equivalence between kilograms and grams.
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| WARM UP / DRILL | **IWB –** *Measure Match* Students <http://www.teachingmeasures.co.uk/mass/massequiv/equivKG.html> A timed kilogram and gram matching activity.**iPad App –** *Balancing scales – convert between g and kg.* Students work in pairs to balance scales, converting between grams and kilograms. If the application isn’t available, the same activity can be accessed on the following website: <http://mathsframe.co.uk/en/resources/resource/86/convert_g_to_kg> |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  | A farmer loads three sacks of carrots into a box. The total weight of the three sacks is 60kg. The first sack weighs 20.25kg and the second sack weighs 16.5kg. What is the weight of the third sack?  |
| 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 | IWB and internet access interactive activities, iPad with *Balancing Scales* app, metalanguage signage, paper, textas, student tools (maths book, pencils etc.), mini whiteboards, whiteboard markers, scales, variety of pre-cut fruit, chopping board, plastic knives,  |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES |
| * Explicitly communicate lesson outcomes and work quality.
* Teach and review the amount of grams in a kilogram and kilograms in a tonne. Briefly revise decimal notation in relation to mass e.g. 0.5kg=500g, 0.05kg=50g, 0.005kg=5g
* Define and reinforce metalanguage used in the unit e.g. grams, kilograms, mass, measure, scales, tonne, weigh
* IWB interactive scale activity - [**http://www.teachingmeasures.co.uk/mass/classdial/dialdrag.html**](http://www.teachingmeasures.co.uk/mass/classdial/dialdrag.html) - Students read the scale and using whiteboards, write the amount in kilograms and grams. This website may also be used as a teaching tool to show amounts represented in kilograms and grams.
 | LEARNING SEQUENCERemediationS2 or Early S3 | * **Understanding How Grams Combine To Make Kilograms**  -Have students play a 1 kilogram matching game where they need to match the number of grams needed to make 1 kilogram. For example 2x 500g = 1kg, 10x 100g= 1kg
* **Make 50 grams**  -Students estimate how many of each object is needed to make a mass of 50 grams. Students select objects, record their estimate, then measure and record the actual number of objects needed to make a mass of 50 grams. Materials to weigh can include blocks, dice and counters from the classroom, as well as small food items such as peanuts or crackers, and household items including nails, bolts and batteries
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| LEARNING SEQUENCES3 | * **Whole Class Instruction and Modelled Activities:**
* **Conversion Table –** Students rule up a 3x10 grid in their maths books. Display the conversion table with some amounts shown from the following website: <http://www.teachingmeasures.co.uk/mass/dboards/standard/ctableY5kg.html>
* **Investigation: The Average Lunch –** Students find the average mass of lunch, including fruit and drinks, eaten by the students in their small group (this activity should be performed in the morning session). Students should record the mass of each lunch in grams and kilograms and add up each amount to calculate a total amount. Students could also find the average mass of lunch for their group.
* **Worksheet –** Conversion table to reinforce learning - <http://www.teachingmeasures.co.uk/mass/dboards/standardws/Y5kgtog.html>
* **Assessment – Fruit Salad.** The recipe for ideal fruit salad is: 150g oranges, 250g apples, 140g bananas, 90g grapes and 60g strawberries (serves four people). Students must make the recipe for 10 people and write out the new recipe using grams and kilograms for each item of fruit. Once they have their new recipe they have to make the fruit salad within their groups, accurately weighing the fruit.
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| LEARNING SEQUENCEExtension Early S4 | * **Extension Conversion Table –** Students rule up a 3x10 grid in their maths books. Display a conversion table with some amounts shown, similar to the example below:
* **Extension:** Prepare the fruit salad recipe for 15 people
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| **EVALUATION & REFLECTION** | **Student engagement:** **Achievement of Outcomes:****Resources:** **Follow up:** |