**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 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*** Solve problems involving different units of mass, e.g. find the total mass of three items weighing 50g, 750g and 2.5kg
* Relate the mass of one litre of water to one kilogram
 |
| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | * Worksheet – Mass of luggage and baggage allowances, *obtained from Mathletics*
 |
| WARM UP / DRILL | * **IWB -** Play-a-Weigh game <http://www.teachingmeasures.co.uk/mass/stopgame/dMASSy6.html>
 |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  | Emily’s was flying from Hawaii to Sydney and was allowed a 64kg baggage allowance. Her suitcases weighed 21.25kg, 18.5kg and 16372g. What was the total weight of Emily’s bags? How many more grams of luggage could Emily have packed?David’s mum bought 6.2kg of rice, Cassie’s mum bought 750g of rice and Emily’s dad bought 3.05kg of rice. What is the total weight of rice that was bought? |
| 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 | IWB and internet access interactive activities, student tools (maths book, pencils etc.), scales, water, various containers with mL and L marked, unmarked containers, measuring cups.  |

**TEACHING AND LEARNING EXPERIENCES**

|  |  |
| --- | --- |
| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES |
| * Explicitly communicate lesson outcomes and work quality.
* Define and reinforce metalanguage used in the unit e.g. grams, kilograms, mass, measure, scales, tonne, weigh
* Teach and review the mass of water i.e. 1mL of water weighs 1g and 1L of water weighs 1kg.
* Mass of water – Use kitchen scales to measure the mass of a container, then fill the container with one litre of water and measure the mass. Ask students to subtract the mass of the container to find the mass of the water.
 | LEARNING SEQUENCERemediationS2 or Early S3 | * **Problem Solving:** Student’s complete working mathematically activities. Example questions
* Steven goes to the grocery store and is looking at a pumpkin. It has a mass of ¾ of a kilogram. How many grams is the pumpkin?
* Steven goes to the grocery store and is looking at a 3 bags of popcorn. They have a mass of 1 ½ kg. How many grams is the popcorn?
* **Create a Game:** Students make (concentration / snap) to teach other about grams and kilograms
 |
| LEARNING SEQUENCES3 | * **Best buy –** Work out which cereal is the best value for money by calculating how much each would cost per kilogram.

Great Grains: $3.60 for 250g, Munch Muesli $4.00 for 500G and Fruity Flakes $16 for 1.6kg.* **Various objects –** Students must choose 5 various objects to investigate. Accurately weigh each object to find its mass. Calculate the total of the different objects.
* **Mass of water –** Model 375mL=375g and 1.125L= 1L 125mL = 1125mL = 1125g = 1kg 125g = 1.125kg. Repeat, asking students to calculate the mass of 100mL, 2 litres, 3.5 litres and 1 litre 356mL.
* **Mass of water –** Ask students to fill a container with water to 100mL. Then have them measure its mass. Place a shallow container on the kitchen scales and have students pour the water into it. Repeat, asking students to find the mass of 125mL, 500mL, 750mL and 1 litre.
* **Line Graph –** Students construct a line graph based on the volume and mass of water. For example:

 |
| LEARNING SEQUENCEExtension Early S4 | * **Mass of water –** Provide students with various unmarked containers. They must determine the total mass of the container when it is filled with water.
 |
| **EVALUATION & REFLECTION** | **Student engagement:** **Achievement of Outcomes:****Resources:** **Follow up:** |