**MATHEMATICS STAGE 2**

**TEACHING AND LEARNING OVERVIEW**

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| TERM:  | WEEK: 4 | STRAND: Measurement & Geometry | **SUB-STRAND:** Mass 2 | **WORKING MATHEMATICALLY:** MA2-1WM, MA2-2WM |
| OUTCOMES: MA2-12MG | **Measures, records, compares and estimates the masses of objects using kilograms and grams.**  |
| **CONTENT:**  | **Use scaled instruments to measure and compare masses (ACMMG084)** * Interpret commonly used [fractions](http://syllabus.bos.nsw.edu.au/glossary/mat/fraction/?ajax" \t "_blank" \o "Click for more information about 'fractions') of a kilogram, including ½ , ¼ , ¾ and relate these to the number of grams \* Solve problems, including those involving commonly used fractions of a kilogram (Problem Solving)
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| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | *Questioning – examples*I can see an object with a mass of more than 500g. What might the object be?I can see an object with a mass of more than ¼ of a kilogram. What might the object be?I can see an object with a mass of more than ½ kilogram but less than ¾ of a kilogram. What might the object be? |
| WARM UP / DRILL |  |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  | Henry was carrying a small bucket that was full. When the bucket was put on the scales it weighed ½ kg exactly. What might be in the bucket? (it is easy to think of objects that weigh 500g, but do they fill the bucket?) |
| 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 | An assortment of grocery items , Bucket balances and weights , Material suitable for packaging into 1kg (gravel, nuts and bolts, stones, wet sand, marbles, water) , Clay, Fruit and vegetables suitable for bagging (oranges, lemons, onions, potatoes, carrots.  |

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES |
| Explicitly communicate lesson outcomes ReviewHave the students make their own kilogram weights using a range of materials, for example, nuts and bolts, wet sand, gravel, stones, marbles. Using balance scales and a 1 kilogram weight the students can make their own 1 kg weights. The kilogram weights can be readily "sealed" in resealable plastic bags.* When the kilogram mass has been made provide the students with opportunities to find objects and containers that they can compare their kilogram weight to and record their findings in a table. Heavier than a kg – About a kg – Lighter than a kg
* **Teach**We now will explore ½ , ¼ & ¾ of a kilogram. Begin by passing a bag of lollies (with label covered) around.*Is the bag heavier or lighter than a kilogram?Why do you think that?How much lighter?What do we use when we want to weigh something that is lighter than a kilogram?*
* How could we make our kilogram weight into smaller weights?If we divided it into 2 equal parts how much would each one weigh?Have the students create ½ kg or 500 gram weight.
* Pose the problem of creating a ¼ kg or 250grams and ¾ of a kilogram. How many equal parts would they need to divide their kilogram into?
* Finish by finding objects in the room that are close to 500 grams (1/2 kg)and 250 grams(1/4 kilo) and 750g (3/4 kilo)
* Write them in a table using fractions and grams. Extension: Convert to decimals
 | LEARNING SEQUENCERemediationS1 or Early S2 | * Equal Masses:
* Choose an object. Students collect things from around the room that might combine to have the same mass as an object, eg. The duster has the same mass as three pencils and four rubbers. Repeat activity many times, measuring the mass of different objects
* Choose the unit:
* Provide a selection of materials suitable as informal units. Ask students to select the most appropriate unit to measure items such as a box of pencils, a stapler, tec.
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| LEARNING SEQUENCES2 | * **Worksheet:** Student complete activities that require them interpret fractions of a kilogram.
* **Technology:** Students complete interactive activities to practice converting grams to kilograms. *Suggested game* <http://www.ictgames.com/weight.html>
* **Problem Solving:** Student’s complete working mathematically activities. Example questions
1. 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?
2. 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.
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| LEARNING SEQUENCEExtension Late S2 or Early S3 | * **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 –** 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.
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| **EVALUATION & REFLECTION** | **Student Engagement: Achievement of Outcomes:****Resources: Follow Up:**  |