**MATHEMATICS STAGE 2**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 2 | 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)**   * Use the gram as a unit to measure mass, using a scaled instrument. * Associate gram measures with familiar objects, eg a standard egg has a mass of 60 grams (reasoning) * Record masses using the abbreviation for grams (g) | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | Questioning I weighed one item and found that it was less than 1 kilogram. What might the item have been?I weighed one item and found that it was between 500 grams and 1 kilogram. What might the item have been?I weighed one item and found that it was between 750 grams and 1 kilogram. What might the item have been? | | |
| WARM UP / DRILL | |  | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | | * If one paperclip has the mass of 1 gram and 1,000 paperclips have a mass of 1 kilogram, how many kilograms are 8,000 paperclips? | | |
| 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 | | **Station 1:** Ingredients for Chocolate Bubble Cakes, Kitchen scales with at least 10 gram gradations, paper patty cases, cooktop  **Station 2:** 10 g, kitchen scales with 10g gradations, light objects eg feathers, calculators  **Station 3**: 10 g and 50 g weights, paperclips, cm cubes, drawing pins  **Station 4:** kitchen sclaes, envelopes, things to pack in envelopes eg cards, ribbons,  **Station 5:** food packages, calculators | | |

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES | |
| This unit comprises 5 stations which develop the concept of the "feel" of a gram. The stations may be whole class or group activities.  * **Explicitly communicate lesson outcomes**  Teach and Review \* Revise with and review why we use grams to measure mass, how many grams make a kilogram, how to record grams and kilograms in abbreviated form. <http://www.youtube.com/watch?v=h-UFzCWSPdc>  * **Define and Reinforce metalanguage**   **Eg** grams, kilograms, mass, weight etc   * **IWB Game** Revise how to read scales   \* <http://www.ictgames.com/mostlyPostie.html>  \* <http://www.iboard.co.uk/iwb/At-the-Vets-Measuring-471>   * **Scavenger Hunt**   Students participate in a scavenger hunt for objects that weigh grams. They will record their prediction and results in a table.  Students go to various weighing stations around the classroom to test their predictions and record results.  *\*Assessment opportunity – work sample* | LEARNING SEQUENCERemediationS1 or Early S2 | * **Heaviest Pencil Case** – Students work in groups to estimate, and then measure whose pencil case is heaviest by measuring the mass of each pencil case with blocks (teddies, marbles etc.) and recording the results. Students need to ensure that the same informal units are selected for measuring each pencil case. Students then record the order of pencil cases from lightest to heaviest.   <http://www.studyladder.com.au/resources/teacher/mathematics?section=39> |
| LEARNING SEQUENCES2 | Station 1: Chocolate Bubble Cakes In this station we use the scales to measure and make Chocolate Bubble Cakes. 250 g vegetable shortening, 100 g icing sugar, 25 g cocoa, 100 g rice bubbles, 100 g coconut  1. Put vegetable shortening in a saucepan. 2. Cook over a low heat until melted. 3. Sift icing sugar and cocoa together. 4. Add sifted ingredients, rice bubbles and coconut to saucepan, stirring until well combined. 5. Spoon mixture evenly into paper patty cases. 6. Chill until firm.  Station 2 As light as a feather In this station we use kitchen scales and 10 gram weights to figure out the mass of very light objects. Ask the students to find objects in the class they think will weigh about 10 grams and compare these to the weights. They then weigh the object on the kitchen scales.Station 3: Light Challenges In this station we use the "feel" of 10 grams to make some guesses about light objects. We are not allowed to use any measuring scales to help with our guesses. We put each of our guesses on named pieces of paper in the challenge containers to be checked later in the week. Challenge 1: How many paper clips in 10 grams? Challenge 2: How many drawing pins 20 grams? Challenge 3: How many cm cubes in 50 grams?Station 4: The Post Office  In this station we look at sending letters  by Australia Post around Australia.  Using the guide, make up 2 envelopes.  One that will need 5 stamps to send  the other 2 stamps. |
| LEARNING SEQUENCEExtensionLate S2 or Early S3 | * **Weigh In –** Students work in groups to weigh and record each group member’s mass. Their mass should be recorded in decimal notation. Students could then arrange the amounts in ascending or descending order and calculate the average mass of their group.   **Conversion Table –** Students complete a table, similar to the example.     * **Investigation:** The Average Lunch –Using the results from the previous average lunch activity, compare the average lunch mass and total mass from each group. Calculate the total mass of all lunches for the whole class. Calculate the average lunch mass for the class. Express each total in kilograms, grams and as a decimal. Students could then investigate how many 2kg/3kg/4kg crates would be needed to carry the lunches for the whole class. |
| **EVALUATION & REFLECTION** | **Student Engagement: Achievement of Outcomes:**  **Resources: Follow Up:** |