**MATHEMATICS STAGE 2**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 7 | STRAND: Measurement and Geometry | **SUB-STRAND: Area 2** | **WORKING MATHEMATICALLY:**  **MA2-1WM & MA2-2WM** |
| OUTCOMES: MA2-10MG | | Measures, records, compares and estimates areas using square centimetres and square metres | | |
| **CONTENT:** | | **Compare the areas of regular and [irregular shapes](http://syllabus.bos.nsw.edu.au/glossary/mat/irregular-shape/?ajax" \t "_blank" \o "Click for more information about 'irregular shapes') by informal means.**   * compare two or more areas by informal means * explain why two students may obtain different measurements of the area of the same irregular shape | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | Can students compare and order several shapes and objects based on area using appropriate uniform informal units? Students order the area of different shapes then measure using counters and other uniform informal units. Discussion and hands on investigation – Can students compare areas using a grid overlay. E.g. Measuring their hand using a square cm grid overlay? Do students appreciate that measuring area with a square-centimetre grid overlay is more difficult when the shape to be measured is not rectangular. | | |
| WARM UP / DRILL | | * Doubling Up –Resources -6x6 grid, 7-12 dice, counters. Rules - Take it in turn to throw the dice and then double the number and cover that square. The winner is either the person who gets four in a row or the one with the most covered after ten throws. | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | |  | | |
| QUALITY TEACHING ELEMENTS | | **INTELLECTUAL QUALITY** | **QUALITY LEARNING ENVIRONMENT** | **SIGNIFICANCE** |
| Deep knowledge  Deep understanding  Problematic knowledge  Higher-order thinking  Metalanguage | Explicit quality criteria  Engagement  High expectations  Social support  Students’ self-regulation | Background knowledge  Cultural knowledge  Knowledge integration  Inclusivity  Connectedness |
| RESOURCES | | [Nrich Math](http://nrich.maths.org/9028)s – Torn Shapes  [Area Teaching aid –](http://www.echalk.co.uk/maths/dfes_numeracy/Assets/area_flash.swf) How to calculate area?  [Area Interactive Games](http://www.bgfl.org/bgfl/custom/resources_ftp/client_ftp/ks2/maths/perimeter_and_area/index.html)  Geoboards, Grid overlays, | | |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES | |
| Students are shown different shapes.  As a class they estimate and measure the area. Do they get the same results**?**  Question why two students may obtain different measurements for the same area (*Questioning*)   * **CIRCLES**   Approximate the area of a circle to the nearest centimetre. Cover it with one-centimetre squares. Cover the edges of the circle by cutting a minimum number of squares into triangles or other shapes. Records the numbers of squares used and then record the approximate area of the circle.  Question why two students may obtain different measurements for the same area. | LEARNING SEQUENCERemediationS1 or Early S2 | * **Geoboard Squares**   Students make a unit square on a geoboard, connecting four pegs. Students then make a square with sides of 2 units and record the number of smaller squares contained within the larger one. Students continue making squares with sides of three, four, five, and six units and record their findings in a table. Students are encouraged to look for patterns.  Students record their results on dot, grid or blank paper. |
| LEARNING SEQUENCES2 | * **What Could It Be?**   The teacher poses the question ‘I have measured a surface in our room and found that it has an area of 8 square centimetres. What could it be?’  The teacher provides students with a square centimetre grid overlay. Students then use the grid overlay to identify items that match the teacher’s description.  Students compare and record different-shaped items that have an area of 200 square centimetres.  Students measure a surface in the room using the square centimetre grid overlay, tell their partner the area and challenge their partner to find the surface. |
| LEARNING SEQUENCEExtensionLate S2 or Early S3 | * **Estimating Areas of Blob Prints**   Students work in pairs. The teacher provides each pair with an A4 sheet of 1 cm grid paper. Students fold the sheet of paper in half and squirt a blob of paint on one half. Students then press the halves together and open the sheet again. When the paint has dried, students cut the sheet in half, separating the two blobs.  Each student estimates and counts the number of squares covered by the blob to calculate its area. Students record their results and compare them with those of their partner. Pairs of students compare their ‘blob areas’ with others to find the biggest and smallest blobs.  Possible questions include:  . What was the area of the biggest blob?  . Did you get the same answer as your partner? Why? Why not?  . How did you count the parts where only a part of a square was covered by the blob? |
| **EVALUATION & REFLECTION** | **Student Engagement: Achievement of Outcomes:**  **Resources: Follow Up:** |