**MATHEMATICS STAGE 1**

**TEACHING AND LEARNING OVERVIEW**

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| TERM:  | WEEK: 3 | STRAND: Measurement and Geometry | **SUB-STRAND:** Area | **WORKING MATHEMATICALLY:** MA1-1WM |
| OUTCOMES: MA1 - 10MG | Measures, records, compares and estimates areas using uniform informal units |
| **CONTENT:**  | **Measure and compare areas using uniform [informal units](http://syllabus.bos.nsw.edu.au/glossary/mat/informal-unit/?ajax" \t "_blank" \o "Click for more information about 'informal units')**\* describe why the area remains constant when units are rearranged \* describe any parts of units left over when counting uniform informal units to measure area  |
| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | * **Assessment:**

Give students a sheet with 4 rectangles:* 4cm x 10cm
* 8cm x 10cm
* 6cm x 8cm
* 6cm x 10cm

Ask students to cut them out and superimpose them on each other, and then paste them in increasing order of area. |
| WARM UP / DRILL | * **Cat and Mouse**

Students play a variation of the game Cat and Mouse. One student is outside the circle and one student is inside the circle. When the teacher/student calls ‘open’ the cat and mouse can move inside or outside to chase each other. When the teacher/student calls ‘closed’ the students hold hands to ‘close’ the circle and stop the cat chasing the mouse. The teacher/student chooses when to say ‘open’ or ‘closed’ by whether the cat and mouse are inside or outside the circle. |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  |  |
| 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 | Rectangles printed on paper or cardboard, shapes copied on opposite sides of paper, grid overlays (different shapes), various sized tables, tiles, rectangle/square cut-outs, tracing paper, various sized tables, dice, tiles, rectangle/square cut-outs, tracing paper,paper plates, A4 sheets of paper, chalk, different-shaped or different-sized tiles, envelopes, lids, leaves, tiles, newspapers, drink coasters, pin board, shapes. |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES |
| Explicitly Teach:**Explicit mathematical knowledge** AC syllabus reference:When students understand why **tessellating units** are important, they should be encouraged to make, draw and describe the spatial structure (grid). Students should develop procedures forcounting tile or grid units so that no units are missed or counted twice. **Tessellation - Explain meaning of tessellateDiscuss patterns of tiles in bathrooms/hallways at home. Which tiles have no gaps? Why?**In small groups, students select a shape (eg square, circle, triangle, hexagon, rhombus, trapezium) to investigate whether it tessellates.Students trace around the shape and slide it to a new position attempting to cover the surface without leaving gaps. Students share their drawings. They group the shapes according to those that tessellate and those that do not * **IWB: Tessellation**

<http://nlvm.usu.edu/en/nav/frames_asid_163_g_3_t_3.html?open=activities> | LEARNING SEQUENCEES1 | * **Cover Up**

Students cover a shape with various tessellating and non-tessellating objects such as thin books, pieces of paper, sheets of newspaper, leaves or chip packets.Possible questions include:❚ is the entire shape covered?❚ what other objects could you use so that the entire shape is covered? |
| LEARNING SEQUENCES1 | * **Patchwork Quilts**

The teacher poses the problem: ‘Emma made a patchwork quilt with 24 rectangles and Trent made one with 12 squares. Which quilt was bigger?’The teacher provides students with copies of rectangles so that1 square = 2 rectangles. Students discuss their predictions with a partner. One person makes Emma’s quilt and the other makes Trent’s quilt. Students compare their quilts.Possible questions include:. What if 2 squares = 1 rectangle?(Adapted from CMIM)* **Investigation: Estimate and Check**

Students draw a shape and colour the inside, to indicate the area of the shape. They then estimate and measure the area, stating the number and type of informal units used. Students discuss if another unit would be more suitable. Students investigate and record findings using other units. Possible questions include:❚ which informal unit did you find more appropriate to estimate and measure the area of your shape? Why?❚ what would you use to measure the area of your desktop? Why? How would you do it?❚ can you record your findings?Variation: Students could use Kidpix or other drawing applications to draw their shape and use stamps to fill the area  |
| LEARNING SEQUENCEExtension S2 | * **Area of 10 squares**

Students use grid paper to construct a shape that has an area of 10 square units.Students construct other shapes that have the same area and discuss that an area of ten square units may apply to many different shapes. |
| **EVALUATION & REFLECTION** | **Student Engagement: Achievement of Outcomes:****Resources: Follow Up:** |

* All assessment tasks should be written in **red** and planning should be based around developing the skills to complete that task.
* Assessment rubrics or marking scale should be considered.