**MATHEMATICS STAGE 2**

**TEACHING AND LEARNING OVERVIEW**

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| TERM:  | WEEK:  | STRAND: Measurement & Geometry | **SUB-STRAND:** 2D Space 1 | **WORKING MATHEMATICALLY:** MA2-1WM & MA2-2WM |
| OUTCOMES: MA2-15MG | **Manipulates, identifies and sketches two dimensional shapes, including special quadrilaterals, and describes their features** |
| **CONTENT:**  | **Compare and describe features of two dimensional shapes, including special quadrilaterals.*** Determine the number of pairs of parallel sides, if any, of each of the special quadrilaterals.
* Use measurement to establish and describe side properties of the special quadrilaterals, e.g. opposite sides of parallelogram are the same length.
* Identify and name the special quadrilaterals presented in different orientations
* Explain why a particular quadrilateral has a given name e.g. it’s a parallelogram because it has four sides and the opposite sides are parallel
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| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | **Pre-Assessment**Provide students with a geoboard and some elastics and ask them to make as many quadrilaterals as they can in a specified time.  |
| WARM UP / DRILL | Review the terms parallel, congruent, angles.As a whole class complete the attached quadrilateral quiz.<http://teams.lacoe.edu/documentation/classrooms/amy/geometry/6-8/activities/quad_quest/quad_quest.html> |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  | Solve this riddle: I have two pairs of parallel sides. All my sides are equal. I have four right angles. What am I? |
| 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 | Printable quadrilaterals made on cardboard, Venn diagram, worksheet, camera’s, PowerPoint and quadrilateral game |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES |
| * **Explicitly communicate lesson outcomes and expectations of work quality.**
* **Define and reinforce metalanguage used in the unit** parallel, congruent, angles, edges and vertices.
* **Introduce/review the term perpendicular:** A line is said to be perpendicular to another line if the two lines intersect at a right angle.
* **Revise Quadrilaterals:** -Use the set of printable quadrilaterals to review the attributes of each quadrilaterals.
* **This site has great descriptions of quadrilaterals:** <http://www.mathsisfun.com/quadrilaterals.html>
* **Modelled Activity:** Draw a Venn diagram on the whiteboard. Sort and stick a set of quadrilaterals made of cardboard on the whiteboard using the following parameters.
1. One has perpendicular sides.

The other has no perpendicular sides.1. Has at least one right angle

Has at least one pair of parallel sides* **Identify the attributes of each quadrilateral**. Write down the rule used for sorting.
* **Set of printable quadrilaterals**

<http://suzieshomeeducationideas.blogspot.com.au/2014/07/learning-about-quadrilaterals-printable.html>  | LEARNING SEQUENCERemediationS1 or Early S2 | * **Revision:** Review terms associated with this unit.
* **Digital Geoboard:** Provide students with printed quadrilaterals and have them recreate them on the digital geoboard <http://www.mathlearningcenter.org/web-apps/geoboard/>
* Students sort printed shapes into groups according to their attributes.
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| LEARNING SEQUENCES2 | * **Quadrilaterals Game**: Students match a picture of a shape, a name and two properties of the shape to win the game**.** (See column to left for instructions etc.)
* **Digital Shape Sort:** Students sort quadrilaterals in a variety of orientations enabling them to recognise that the shape does not change even if the orientation changes. <http://www.crickweb.co.uk/ks2numeracy-shape-and-weight.html#quad>
* **Investigation:** Students go out into the playground and investigate where they can find parallel lines. Take photos of parallel lines that they find. Bring them back to class and make into a slide show of where parallel lines occur in the environment. Have students find additional pictures of parallel lines in the environment to add to their collection. e.g. .railway tracks, double lines on the road etc...
* **Assessment -** Worksheet (attached file): Students explain why a given quadrilateral is not another shape.
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| LEARNING SEQUENCEExtension * Late S2 or Early S3
 | * **Quadrilateral Quiz 1:** Students complete this more advanced quiz about quadrilaterals: <http://www.regentsprep.org/Regents/math/geometry/GP9/PracQuad.htm>
* **Quadrilateral Quiz 2:** <http://www.ixl.com/math/grade-6/classify-quadrilaterals>Students answer questions about quadrilaterals including special quadrilaterals.
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|  | **EVALUATION & REFLECTION** | **Student Engagement:** **Achievement of Outcomes:****Resources:** **Follow up:** |