**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 1 | STRAND: Measurement and Geometry | **SUB-STRAND:** Position | **WORKING MATHEMATICALLY:** MA3-1WM |
| OUTCOMES: MA3-17MG | | **Locates and describes position on maps using a grid-reference system** | | |
| **CONTENT:** | | **Use a grid-reference system to describe locations (ACMMG113)**   * Find locations on maps, including maps with legends, given their grid references http://syllabus.bos.nsw.edu.au/wsimages/cca/l.png * Describe particular locations on grid-referenced maps, including maps with a legend, eg 'The post office is at E4' | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | * Students complete Coordinate Meeting Place and Map Coordinates on Mathletics.com | | |
| WARM UP / DRILL | | Play ‘I Have Who Has?’ Coordinate Plane (identify the object at the location 1)  Pgs 165-169 RIC ‘I Have, Who Has?’ Mathematics Ages 11+ (Trisha Callella 2010) | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | | 2008 Year 5 NAPLAN Qn 31Students must use Newman’s to determine the shortest distance between 2 places on a grid using a scale. (Student’s expected to use a trial and error strategy of all routes) | | |
| 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 | | ‘I Have, Who Has?’ cards- laminated and 1 copy of the coordinate plane for each student to accompany cards.  Large paper, blocks, online maps, grid paper. Access to Mathletics.com | | |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES | |
| * Discuss the expression ‘birds-eye view’. Ask: Why is an aerial view often referred to as a ‘birds-eye view’? Have students brainstorm why people might want aerial maps of areas. * Provide blocks of various sizes and a large sheet of paper. Ask students to identify prominent features of the local neighbourhood; for example the shopping centre. Label a large block and place it on the paper to represent that feature. Repeat with other features of the local area, including the school. Ask students to arrange the blocks in their proper relationship to one another, then use rulers to represent the roads. * Have students draw their ‘aerial map’ on grid paper after discussing scale and have them pose their own location questions about the area to ask a partner. * **Google Maps**   Students access ‘Google maps’ via the internet or as a whole class on an interactive whiteboard. Explore the website. <http://maps.google.com.au/maps?hl=en&tab=wl> Explore Earth and Satellite. Zoom in and out keeping an eye on scale. View street level and icons. Get directions to a known location. | LEARNING SEQUENCERemediationS2 or Early S3 | * Whiteboard (double sided) Battleships   Players take turns calling out a row and column, attempting to name a square containing enemy ships. Whole class v’s teacher to begin with- then boys against girls or in pairs. |
| LEARNING SEQUENCES3 | **Guided Group/Independent Activities**   * **Treasure Island**   Students draw a ‘Treasure Island’ map, creating a scale and compass rose, and imposing a grid and coordinates. They write a set of directions, using compass points and grid coordinates, to the location of a hidden treasure on their map. Students exchange maps and follow the directions to find the treasure.  *Variation:* Students could reproduce their maps on a computer.   * Complete Using a Key! on Mathletics.com |
| LEARNING SEQUENCEExtensionEarly S4 | * Students design their maps using a scale of their choice. They then write a series of questions to accompany their directions. Questions may include distances between features or finding the shortest path as the ship sails. After swapping maps with another student, they must answer the questions along the way to locate the treasure. * **Spreadsheet Designs**   Students plot coordinates on a spreadsheet to create a picture or pattern. They write a list of instructions using coordinates that describes their picture or pattern. Another student uses the coordinates to reproduce the picture or pattern. |
| **EVALUATION & REFLECTION** | **Student Engagement: Achievement of Outcomes:**  **Resources: Follow Up:** |