**MATHEMATICS STAGE 1**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: | STRAND: Measurement & Geometry | **SUB-STRAND:** 2D Space 2 | **WORKING MATHEMATICALLY:**  MA1-1WM |
| OUTCOMES: MA1-15MG | | **Manipulates, sorts, represents, describes, and explores two-dimensional shapes, including quadrilaterals, pentagons, hexagons and octagons.** | | |
| **CONTENT:** | | **Identify and describe half-turns and quarter-turns.**   * Determine the number of half-turns required for a full-turn and the number of quarter-turns required for a full-turn * Copy and manipulate a shape using the computer function for turn * Connect the use of quarter- and half- turns to the turn on the minute hand on a clock for the passing of quarter- and half- hours | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | **Pre-Assessment:**    Worksheet – TurnTime.docx | | |
| WARM UP / DRILL | | Students select a shape and turn it a quarter-turn and trace it. They continue turning the shape around a point until the shape is in its original position. Students discuss the picture that they made. | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | | At Midday, the minute hand of the clock moved 3 quarter turns. What time would it be after this was done? | | |
| 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 | | Worksheet –, square card, paper, brass fasteners, 2D shape templates or pattern blocks | | |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES | |
| * **Explicitly communicate lesson outcomes and work quality.** * **Define and Reinforce metalanguage used in the unit,** e.g. turn, full-turn, half-turn, quarter-turn, clockwise and anticlockwise. * **Connect the use of quarter- and half-turns to the turn of the minute hand on a clock** for the passing of quarter- and half-hours. * **The Clock Face** - Place numbers 1, 2, 3, 6 and 9 on walls to represent the ¼ hours. * If you are the minute hand of a clock, and you make a ¼ turn, what number are you pointing to? * How much time has passed when the minute hand moves this far. So a ¼ turn of the minute hand shows that ¼ hour has passed. * Repeat for ½ and full turn. How many ¼ turns in a full hour? How many half turns in an hour? | LEARNING SEQUENCERemediationES1 | * Students work on the IWB and complete the activities at:   <http://nrich.maths.org/5560/index>.   * Students then create their own man. Using a barrier, they then challenge a peer to replicate the position of their own character by giving verbal instructions. |
| LEARNING SEQUENCES1 | * **Worksheet:** clockanticlock.docx * Give each child a square of card with a hole in the centre. The children cut a pattern around the edge to make a new shape, and then draw an arrow from its centre to one side. Fix a brass fastener through the hole and through a sheet of paper. Children write the number 12 at the top of the paper with the arrow pointing towards it. They trace the shape then turn it a quarter-turn clockwise. Ask – If the paper was a clock face, what number would it be pointing to now? How much time has passed? Continue until the arrow returns to the 12. Repeat for a half-turn. Remove the card and examine the pattern produced. * Students use Microsoft Word to draw a variety of shape and use the rotate function to reposition them. * **Investigation:** Using the various shapes in the Shape Rotator (refer link below), students determine how many quarter-turns are required for a full turn, and how many half turns are required for a full turn. (<http://www.iboard.co.uk/iwb/Shape-Rotator-117>) * Using concrete materials, students investigate why some shapes appear not to move when rotated through a quarter and/or half turn. Students discuss their findings. * **Assessment:** Re-doWorksheet – TurnTime.docx |
| LEARNING SEQUENCEExtensionEarly S2 | * **Race Around the Track:** Students create a racetrack on grid paper and develop a series of instructions using the terminology; quarter, half and full turns … clockwise and anti-clockwise. Using blank grid paper (each marked with the word START), students then challenge their peers to race around the track using the instructions. |
| **EVALUATION & REFLECTION** | **Student Engagement:** **Achievement of Outcomes:**  **Resources:** **Follow Up:** |