**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
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| 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
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| 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.
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| 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
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| LEARNING SEQUENCEExtension Early 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.
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| **EVALUATION & REFLECTION** | **Student Engagement:** **Achievement of Outcomes:****Resources:** **Follow Up:** |