**MATHEMATICS STAGE 2**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 1 - 2 | STRAND: Number and Algebra | **SUB-STRAND:** Patterns and Algebra 1 | WORKING MATHEMATICALLY: MA2-1WM, MA2-2WM, MA2-3WM |
| OUTCOMES: MA2-8NA | | **Generalises properties of odd and even numbers, generates number patterns, and completes simple number**  **Sentences by calculating missing values.** | | |
| **CONTENT:** | | **Describe, continue and create number patterns resulting from performing addition or subtraction. (ACMNA060)**  - identify and describe patterns when counting forwards or backwards by threes, fours, sixes, sevens, eights and nines from any starting point  - model, describe and then record number patterns using diagrams, words or symbols L  - ask questions about how number patterns have been created and how they can be continued (Communicating)LCCT   * - create and continue a variety of number patterns that increase or decrease, and describe them in more than one way L | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | * Provide students with a hundreds chart. Ask them to colour the multiples of 3, 4 and 7 on there. Using the same chart (and a new coloured pencil) give students a starting number and ask them to go backwards by 7’s. Using another colour provide a different starting number and ask the students to go forward by 6’s. | | |
| WARM UP / DRILL | | * **Skip counting**   Daily practice of counting forwards and backwards by 3, 4, 6, 7, 8, and 9 from any starting point. | | |
| 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 | | Matchsticks, hundred chart, 0-9 wheel | | |

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES | |
| Lesson 1Have the students generate the sequence for multiples of three by silently counting two numbers and then counting out loud every third number to 30. Repeat the activity and have the students record the numbers that are said aloud. Tell the students that the numbers recorded are the multiples of three.Organise the students into pairs and give each pair a Hundred chart. Ask the students to colour in each multiple of three. Discuss to see if there are any patterns that arise. Give students different starting points and discuss and record how they can identify the pattern.  * **Lesson 2**   Have the students investigate the sequences created by repeatedly adding three to a number given. Have the student’s record the first 10 terms of the sequence in a table.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **1st no.** | **2nd no.** | **3rd no** | **4th no** | **5th no** | | **6** | **11** | **16** | **21** | **26** |     After the students have completed the task, have them cover the first three numbers in the sequence on their table, and ask, What is the starting number of this sequence? Ask students to cover one specific number in the sequence and then ask them to identify this number.   * **Lesson 3**   Provide the students with matchsticks and ask them to use three sticks to create a triangle. Have the students record the number of triangles created and the total number of sticks used. Have the students repeat the process to create nine additional triangles.  After completing the task have the students discuss how the sequence of multiples could be continued without making the shapes.  Ask: Can you work out how many matchsticks you would need if you wanted to make 15 triangles? How could you work this out?   * **Lesson 4**   Relating Multiples Sequences  Students investigate relationships among sequences of multiples, such as relationships among the multiples of two, four and eight, relationships between the multiples of three and six, and relationships among the multiples of three, four and twelve.  Multiples of one and nine produce the same wheel pattern, as do the multiples of two and eight, the multiples of three and seven and the multiples of four and six. Students observe that each pair with the same pattern (e.g. one and nine) adds to ten, and the patterns of the two are drawn in opposite directions. | LEARNING SEQUENCERemediationS2 | * All lessons are to be done as per S2 however only looking at 2’s, 5s and 10’s. * Matchstick lesson – use a square, triangle and pentagon. |
| LEARNING SEQUENCES2 | * Using the hundred chart and various colours, students are to do Lesson 1 for multiples of 4’s, 6’s, 7’s, 8’s and 9’s. Students use the colours to assist with counting forwards and backwards by multiples.   Investigation: Using a blank hundreds chart, have students identify patterns of 4, 6,7,8,9 using different starting numbers. (Provide the starting numbers to assist with marking and accuracy) <http://www.crickweb.co.uk/ks1numeracy.html#100square> (interactive hundreds chart)   * Have the students investigate the sequences (using a table) created by repeatedly adding four to a number of their choice. Have the students record the first ten terms of the sequence in a table. Complete as per lesson 2.   Investigation: Have students repeat this activity for patterns of 6, 7, 8, 9. What were the differences and similarities between the patterns? How did they complete the task? Highlight terms: pattern, ascending, multiplication   * Using matchsticks, have students’ complete Lesson 3 making: rhombuses, hexagons, octagons, nonagons and heptagons.   Investigation: Can you work out how many matchsticks you would need if you wanted to make 15 of your shape? How could you work this out? (work samples)   * Relating Multiples Sequences- Have the students investigate the relationships among   the patterns created on the 0-9 wheel by the final digits in different sequences of multiples. |
| LEARNING SEQUENCEExtensionLate S2 | * <http://www.bbc.co.uk/bitesize/ks2/maths/number/number_patterns/play/> This game looks and before and after patterns with various starting numbers. * Use patterns where the starting number is less than one e.g. fractions and decimals to determine if students receive similar results.   Investigation: Tell students that all multiples of 3 have a strange coincidence: when the digits are added the result is  also a multiple of 3. Students use common multiples of 3 and then look at larger multiples of 3 eg 4152 (3 x 1384), 6711 (3 x 2237)  How could we use this knowledge to see which numbers are divisible by 3?  How could we use this knowledge to see which numbers are divisible by 6? (must be even and divisible  by 3)  Students may look at the same investigation for multiples of 9. |
| **EVALUATION & REFLECTION** |  |

* 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.