**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

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| TERM:  | WEEK:  | STRAND: Number and Algebra | **SUB-STRAND:** Patterns and Algebra 1 | **WORKING MATHEMATICALLY: MA3-1WM, MA3-2WM** |
| OUTCOMES: | **Analyses and creates geometric and number patterns, constructs and completes number sentences, and locates points on the Cartesian plane** |
| **CONTENT:**  | **Describe, continue and create patterns with fractions, decimals and whole numbers resulting from addition and subtraction.****(ACMNA107)*** Identify, continue and create simple number patterns involving addition and subtraction.
* Describe patterns using the terms ‘increase’ and ‘decrease’ e.g. for the pattern 48,41,34,27. The terms decrease by seven
 |
| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | * Use the assessment worksheet as the pre-assessment
 |
| WARM UP / DRILL | * Skip counting various numbers to see that students create a pattern e.g. 3, 6, 7, 8, 9’s.
 |
| 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 | Number patterns worksheetMatchsticks for children who require remediation. |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES |
| Explicitly communicate lesson outcomes and work quality.* View Powerpoint number sequences <http://www.primaryresources.co.uk/maths/mathsB3.htm>
* Teacher writes 3 number sequences on the board.
	+ 27,34,41,48,55
	+ 3,6,9,12,15,18
* Looking at the sequence the teacher shows that each sequence is determined by the same rule increasing by a given number. Students are introduced to the term increase. Students then make their own sequence. Share their sequences. Discuss the steps needed to find the rule for number patterns. Decide if the pattern is moving forwards or backwards, work out how many numbers forward or backwards.
* Repeated the above process but this time introduce the term decrease. Teacher provides samples of sequences. Students create their own sequence and share.
 | LEARNING SEQUENCERemediationS2 or Early S3 | * Making patterns with concrete material e.g. matchsticks.
* Creating number patterns using smaller sequences e.g. counting by 2’s
* Repeat given lesson.
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| LEARNING SEQUENCES3 | * Number sequence worksheet – creating patterns
* Play interactive game –BBC <http://www.bbc.co.uk/bitesize/ks2/maths/number/number_patterns/play/>
* Calculator challenge

Ask students to have a calculator challenge. Students enter 10++then enter1+2= The constant operator on the calculator will display the results 11,12 ,13Ask students to describe the pattern and write a ruleAssessment – Worksheet |
| LEARNING SEQUENCEExtension Early S4 | * Encourage students to create patterns that involve two operations.
* Ask students to write about a pattern involving square numbers.
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| **EVALUATION & REFLECTION** | Can students find and describe rules for number patterns?Can students use rules to continue and create number patterns? |

* 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.