**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, MA3-3WM** |
| **OUTCOMES:** **MA3-8NA** | | **Analyses and creates geometric and number patterns, constructs and completes number sentences, and locates points on the Cartesian plane** | | |
| **CONTENT:** | | **Use equivalent number sentences involving multiplication and division to find unknown quantities (ACMNA121)**   * complete number sentences that involve more than one operation by calculating missing numbers * describe strategies for completing simple number sentences and justify solutions * identify and use inverse operations to assist with the solution of number sentences | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | |  | | |
| WARM UP / DRILL | | - Times table drill  - 20 questions | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | | Sam paddled the 402km of the Nepean River in his canoe over 6 days. He paddled every day covering the same distance. How far did he travel each day? | | |
| 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 | | IWB , Worksheets | | |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES | |
| Explicitly communicate lesson outcomes and work quality.  * **Lesson 1** * Start with a tables quiz using the 4 operations. E.g. 6+8,6x7, 17-5. * Teach children the order of operations   **1**.Grouping symbols  **2** ‘ x’ and ‘ –‘ left to right as they occur  **3** ‘+’ and ‘-‘left to right as they occur.   * Discuss several examples with the children, reinforcing the need to have a set of rules that we all must follow. * **Lesson 2** * Teacher places a sentence on the board . ? – 9=19 ? = 19+ 9 * Children write a problem that could suit this number sentence. Compare responses. Point out to children that the number sentence can either be addition and subtraction. Discuss the term ‘Inverse operations’ * Discuss and demonstrate a number of calculations working backwards. Working through the process aloud and pointing out the inverse operations being used.   Find ? so that 125 divided 5 =  Find ? so that ?x5 =125 | LEARNING SEQUENCERemediationS2 or Early S3 | * Make some cards with sets of incomplete multiplication or division number sentences such as the following. Students complete the number sentences, discuss their strategies for doing so, and discuss the patterns. |
| LEARNING SEQUENCES3 | * Complete worksheet with lots of examples (using Lesson 1 as a guide) * Play Order of operations <http://www.smashmaths.com.au/index> * Investigation: Have students make their own questions. * Students complete number sentences where the operation sign is missing. * Give children examples with simple fractions and decimals to complete * Play http://www.smashmaths.com.au/index.php/n-a/blank-component/18-patterns-and-algebra. Number Games |
| LEARNING SEQUENCEExtensionEarly S4 | * Incomplete number sentences * Increase the difficulty of the inverse equations. Have students provide incomplete number sentences for the whole class to solve. For example: |
| **EVALUATION & REFLECTION** | Is the student able to solve problems involving mixed operations?  Can students solve problems using operations? |