**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)**   * Describe how inverse operations can be used to solve a number sentence * Complete number sentences involving multiplication and division, including simple fractions or decimals | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | |  | | |
| WARM UP / DRILL | | * Play a game of ‘Opposites’. Call out ten questions using a variety of the four main operations [addition, subtraction, multiplication and division]. Ask students to solve these questions mentally using the opposite operation to the operation in the question.eg 6 x?=18 can be solved by the student thinking 18divided 6=? | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | | Jan bought two trains tickets that cost $37.50 each. She paid with a $100 note. : Which calculation would give her the correct change? [a] 100- [2x37.50]= [b] [100-37.50]x2 = [c] 2x 37.50-2= [d] 100-37.50-2= | | |
| 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 | | Maths Plus worksheet | | |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES | |
| Ask students what the opposite operation to multiplication is. Explain this is called the ‘inverse’ operation. Ask students to use their multiplication knowledge to check 144divide12 =12 and then 12x12=144. Repeat 192 divided by4 =48 and for 6x 37=222 and 8 x18 =144.  * Write on the board 156 divided by6 is more than 15. Ask students to suggest how they could check if this statement is true or false. Ensure that students realise that if they multiply 6 by 15. Repeat this for 125 divided by 5 and 147 divided by 7.   Some children will use estimation skills rather than multiplication to do these.   * Write this problem on the board   67  8(---  Ask children to discuss with a friend how they could find the missing digits. Choose pairs to demonstrate how multiplying 67x8 will give the missing number. After children have multiplied [67 x8 = 536] ask them to check answer by dividing to see if they get 67.   * Process can be repeated using fraction or decimals. | LEARNING SEQUENCERemediationS2 or Early S3 | **Related Multiplication and Division Facts**   * **Record some sets of number sentences on cards such as the following.**     Ask students: *What can you tell me about these number sentences?* Studnets make their own cards like these, covering some of the numbers with flaps.   * Show cards such as the following and ask students if they can work out the missing numbers and explain the reasons for their answers. Numbers of this magnitude have been chosen to make it more difficult for students to do a quick calculation. They need to look for other strategies, such as relating the facts on the card. |
| LEARNING SEQUENCES3 | * Play Opposites * Complete worksheet (From Maths Plus) * Play Crack the code http://getsmarts.weebly.com/patterns--algebra2.html |
| LEARNING SEQUENCEExtensionEarly S4 | * Insert algebraic symbols into equations. The missing number hence is represented by pronumerals. |
| **EVALUATION & REFLECTION** | Can children use inverse operations to check and complete number sentences?  Can children use estimation to check answers? |