**MATHEMATICS STAGE 2**

**TEACHING AND LEARNING OVERVIEW**

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| TERM:  | WEEK: 9 | STRAND: Number and Algebra | **SUB-STRAND:** Multiplication and Division 1 | **WORKING MATHEMATICALLY:** WA2-1WM MA2-2WM MA2-3WM |
| OUTCOMES: | **Uses mental and informal written strategies for multiplication and division.****Checks the accuracy of a statement and explains the reasoning used** |
| **CONTENT:**  | * Explain problem-solving strategies using language, actions, materials and drawings
* Describe methods used in solving multiplication problems
* Explain how an answer was obtained and compare their own method of solution with the methods of other students.
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| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | Worksheet - “Chicken Pox” problem from Targeting Maths Problem solving.Otti, the octopus, got the chicken pox. He came out in spots on his tentacles. How many spots on each leg if he had 8, 32, 64, 80, 112 and 160. Furthermore, explain how you got your answer. |
| WARM UP / DRILL | * **Dominoes**

The teacher creates a set of dominoes to be used for practicing multiplication facts. Half of the domino has an answer while the other half has two numbers to be multiplied or divided together (to obtain a different answer)The students try and match the operation with its answer. They play the normal domino rules. |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  | TricyclesShow the students a set of 3-5 tricycles. Get students to complete the number sentence \_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_\_\_\_\_Discuss how students got their answer |
| 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 | IWB materials on arrays, hundreds chart to show 2’s, 5’s, 10’s and 3’s, worksheets, concrete materials such as counters and paper money, Mathletics, Studdyladder, [swcurriculumsupport.wikispaces.com/file/view/Mulitplication%20and%20Division%20S2%201.pdf/468887240/Mulitplication%20and%20Division%20S2%201.pdf](http://swcurriculumsupport.wikispaces.com/file/view/Mulitplication%20and%20Division%20S2%201.pdf/468887240/Mulitplication%20and%20Division%20S2%201.pdf) |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES |
| Explicit TeachingExplicitly teach the different ways and strategies in which to actively solve problems. These can range from read, plan, work and check, drawing a diagram, looking for patterns, act it out, make a list, working backwards. These strategies will work with the mental strategies covered such as doubling, factors, repeated addition and arrays.* Explain and discuss these strategies using language, materials and actions.

**Define and Reinforce*** Discuss and define the metalanguage used in the unit: strategy

**IWB*** Using IWB resources, introduce and demonstrate activities on the board that relate to and involve selecting the best strategy to solve a problem.
 | LEARNING SEQUENCERemediationS1 or Early S2 | * Simple 1-2 step problems which are easy to follow and use direct known multiplication facts and use picture clues. Get students to explain how they worked out the answer.
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| LEARNING SEQUENCES2 | * Put students into small groups and allow each group to work together or individually to solve a multiplication or division problem. Each group will have a different focus - from read, plan, works and check, drawing a diagram, looking for patterns, making a list, mental strategies and working backwards. Allow for some rotations and then bring the class together for a group discussion. Class discusses how the strategies helped in solving the problems.
* Various problem solving tasks and questions:

<http://www.k5learning.com/free-math-worksheets/third-grade-3/word-problems>* **Investigation**: Mental Strategies

Students are asked to write a multiplication fact that they have trouble remembering eg 8 × 7. They are encouraged to try mental strategies to help them recall that fact by using known facts eg ‘I know 7 × 7 is 49 so 8 × 7 must be 7 more than 49 which is 56’ or using the inverse relationship of division:‘I know 56 ÷ 8 = 7 so 8 × 7 = 56’.* Assessment - Observations and anecdotal records of students responses in groups and in individual tasks.
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| LEARNING SEQUENCEExtension Late S2 or Early S3 | * Provide students with multiplication and division number sentences and allow students to create and write a variety of problems which their peers would have to solve which involve directing their peers to use one of the methods covered during the week.
* Open-ended problems - such as those found in Targeting Maths Problem solving.
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| **EVALUATION & REFLECTION** | **Student Engagement Achievement of Outcomes****Resources Follow up** |

* 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.