**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 15 | STRAND: Number & Algebra | **SUB-STRAND:** Multiplication & Division 2 | **WORKING MATHEMATICALLY:**  MA3-1WM |
| OUTCOMES: MA3-6NA | | **Selects and applies appropriate strategies for multiplication and division, and applies the order of operations to calculations involving more than one operation.** | | |
| **CONTENT:** | | **Explore the use of brackets and the order of operations to write number sentences.**   * Use the term ‘operations’ to describe collectively the process of addition, subtraction, multiplication and division. * Investigate and establish the order of operations using real-life contexts, eg ‘I buy six goldfish costing $10 each and two water plants costing $4 each. What is the total cost?’; this can be represented by the number sentence 6 x 10 + 2 x 4 but, to obtain the total cost, multiplication must be performed before addition. * Write a number sentence to represent real life situations. | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | Worksheet – Order of operations pre-test excluding the use of brackets and integers. | | |
| WARM UP / DRILL | | Various number fact drills as follows:   * Shoot out using multiplication facts * Multiplication and division speed tests. * Using interactive 100s chart on IWB, have students time how long it takes to list the multiples of various numbers. | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | | ‘I buy six goldfish costing $10 each and two water plants costing $4 each. What is the total cost?’ | | |
| 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 | | Interactive 100s Chart on IWB, Order of operations pre-test created on <http://worksheets.theteacherscorner.net/make-your-own/math-worksheets/algebra/order-of-operations-worksheet.php> , BIMDAS ppt <http://www.google.com.au/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&ved=0CEEQFjAC&url=http%3A%2F%2Fbshs-maths.wikispaces.com%2Ffile%2Fview%2FBIMDAS.ppt&ei=kDd3U5zSKMzokAX50oDwDg&usg=AFQjCNFUnhrLFnEa4nCsK7hoBQt8hdN0uQ&sig2=gmLQ7Tq-CJQcoHINmfQdtQ&bvm=bv.66917471,d.dGI> | | |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES | |
| ☐ **Define the term** operations and clarify that this includes addition, subtraction, multiplication and division.  ☐ **Explicitly teach** that the order of operations can be remembered by using the acronym *BIMDAS*. **Brackets, Indices, Multiplication, Division, Addition, Subtraction.** Refer to power point slide in resources.  ☐ **IWB Order of operations game –** As a class work through multiple questions on maths frog game.  <http://cemc2.math.uwaterloo.ca/mathfrog/english/kidz/order.shtml> | LEARNING SEQUENCERemediationS2 or Early S3 | ☐ Revisit number facts and multiplication facts.  ☐ Revise formal algorithms e.g. 258 6 = |
| LEARNING SEQUENCES3 | **Whole Class Instruction and Modelled Activities**  ☐ **Worksheet:** Students complete a worksheet that requires them to solve basic algorithms that include addition, subtraction, multiplication and division. E.g. 3 + 4 x 5 - 7 =  ☐ **Worksheet 2:** Students complete a worksheet that includes both word problems and algorithms. The algorithms will contain addition, subtraction, multiplication, division and also the use of brackets.  ☐ **5 Dice order of operations game on iPad.** Have students play 5 Dice order of operations game in pairs or small groups. Game is suitable for students with varying levels of understanding.  ☐ **Investigation:** Have students create multiple word problems that relate to real world scenarios. Word problems must contain the use of multiple operations. E.g. I ordered 3 large pizzas that cost $13 each, 2 garlic breads that cost $3 each and 1 bottle of coke that cost $5. What is my total cost? 3 x 13 + 2 x 3 + 5 =  ☐ Assessment – Quiz with various algorithms relating to order of operations.ms and problems |
| LEARNING SEQUENCEExtensionEarly S4 | ☐ **5 Dice order of operations game on iPad.** Have students play 5 Dice order of operations game in pairs or small groups. Game is pitched at different ability levels so have more capable students work through harder questions. The harder questions will include the use of integers. |
| **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.