**MATHEMATICS STAGE 2**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: 2 | WEEK: 7  | STRAND: Number and Algebra | **SUB-STRAND:** Patterns and Algebra 2 | **WORKING MATHEMATICALLY:** MA2-1WM, MA2-2WM, MA2-3WM |
| OUTCOMES: MA2-2WM | **Selects and uses appropriate mental or written strategies, or technology, to solve problems** |
| **CONTENT:**  | Solve word problems by using number sentences involving multiplication or division where there is no [remainder](http://syllabus.bos.nsw.edu.au/glossary/mat/remainder/?ajax" \t "_blank" \o "Click for more information about 'remainder')(ACMNA082* discuss whether it is more appropriate to represent the problem using multiply or divide in order to calculate the solution (Communicating, Reasoning) CT
* pose a word problem based on a given number sentence: a problem could be: 'I have 28 cans of drink and stack them into rows of 4. How many rows will there be?' (Communicating, Problem Solving, Reasoning) http://syllabus.bos.nsw.edu.au/wsimages/cca/l.pngCT
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| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | Word Problems –Worksheet. |
| WARM UP / DRILL | * **Whisper or stress counting -** The teacher leads the class in counting by whispering the numbers not in the sequence and emphasising those that are part of the number pattern.
* **Skip or rhythmic counting -** Students should be given opportunities to hear and say number sequences with lots of body movements to assist, such as claps, finger clicks and slaps
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| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  | I have 28 cans of drink and stack them into rows of 4. How many rows will there be? |
| 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 |  |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES |
| * Explicitly communicate lesson outcomes and work quality.
* **Teach and review** Students need to be explicitly taught numerous strategies before they can use multiplication as an operation and recognise division as its opposite operation, for example, skip counting, repeated addition and forming arrays to represent multiplication.

Define and reinforce metalanguage used in the lessons eg multiply, multiplied by, lots of, groups of, repeated addition, add, total, equals | LEARNING SEQUENCERemediationS1 or Early S2 | **Rearranging Rectangles*** Place 16 tiles in a group on the floor and ask a student to use the tiles to create a rectangle. Ask:
* *How many rows are there?*
* *How many tiles are there in each row?*
* *How many tiles are there altogether?*
* *How we could we write this using words?*
* *How could we write this using symbols?*
* *What other rectangles could we make using the same number of tiles?*

Repeat the questioning for each new rectangle created, recording the answers.*What do you notice about the number of tiles in all of these rectangles?*Select 2 of the rectangles created. Ask:*- What could we say about the number of tiles in all of these rectangles?**- How could we write this using symbols?** Provide each student with 12 square tiles to investigate the different rectangles that can be created. Have the students use grid paper to represent the rectangles that they have created and record accompanying number sentences. Have the students share their investigations. Allow the students to repeat the activity using a different number of tiles.

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| LEARNING SEQUENCES2 | * Solving Word Problems

Revisit demonstration on how to solve a word problem using the Newman’s questions shown below as a guide.Macintosh HD:private:var:folders:y0:ffpzcf511zq9qbjpcpl2cjyc0000gv:T:TemporaryItems:nn_numb_mudi_table_05.jpg* Word problem bingo, In pairs play word problem bingo.

* Write up equation on the board, 7x5=35, have children come up with different word problems for the equation. Eg, I bought 7 boxes of chocolates, they cost $5 dollars each, what was the total cost of the chocolates?
* Do several examples, also using division.
* What is the Question? worksheet. Students work in pairs.

* Discuss students word problems. What language have the used to convey if the problem is multiplication or division.
* Look at key words in word problems. List under headings-multiply, divide and equals. Eg;

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| **Multiplication** | of, times, multiplied by, product ofincreased/decreased by a, factor of a, area, multiplied by, of, per, product of, rate, times, triple, twice |
| **Division** | per, a, out of, quotient ofpercent (divide by 100), divided, half, how many each, out of, quarter |
| **Equals** | is, are, was, were, will be, gives, sold for |

* Revisit students word problems, can they change them to create better/different problems using different language.
* Students in pairs work on the Keywords Problem worksheet.

* Assessment

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| LEARNING SEQUENCEExtension Late S2 or Early S3 | **Which number doesn’t belong?*** Record the following numerals on the board in random order. For example:

Tell the students that all but one of these numbers are part of a sequence. Ask:* *How could describe this sequence of numbers?*
* *Which number doesn’t belong to the sequence? Why?*
* Repeat the activity with other sequences. For example:

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| **EVALUATION & REFLECTION** |  |