**MATHEMATICS STAGE 2**

 **TEACHING AND LEARNING OVERVIEW**

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| TERM:  | WEEK: 17 | STRAND: Number and Algebra | **SUB-STRAND:** Multiplication and Division 2  | **WORKING MATHEMATICALLY:** MA2-1WM, MA2-2WM & MA2-3WM |
| OUTCOMES: MA2-6NA | **Uses mental and informal written strategies for multiplication and division** |
| **CONTENT:**  | **Recall multiplication facts up to 10 x 10 and related division facts**\* Relate multiplication facts to their inverse division facts: e.g. 6 × 4 = 24, so 24 ÷ 6 = 4 and 24 ÷ 4 = 6. \* Students should come to understand that division “undoes” multiplication. 5 x 2 = 10 5 = 10 ÷ 210 ÷ 2 = 5 10 = 5 x 2 |
| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | Division wheels or grids with dividend and one divisor recorded; students fill in missing divisor. Also there are other worksheets that can be generated at the following sites:http://www.helpingwithmath.com/printables/worksheets/WorksheetGenerator04.htmhttp://www.helpingwithmath.com/by\_subject/multiplication/mul\_tables\_charts.htm |
| WARM UP / DRILL | CD with times tables songs. Multiplication grids and 100 chart: http://splash.abc.net.au/res/i/L83/index.htmlhttp://www.visnos.com/demos/times-tables |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  | Jennifer has 30 buttons. She uses 5 buttons on each shirt. How many shirts are there?Students can rewrite this number problem using multiplication e.g. Jennifer has \_\_ shirts. She uses 5 buttons on each shirt. How many buttons does she need altogether? |
| 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 | Numeral and sign cards to make number sentences for multiplication and division. Cards that have two multiples and product; matching card with product divided by one of the multiples and space for answer. IWB: times tables song - <https://www.youtube.com/watch?v=igoGDE5hLjw> Arrays: <http://splash.abc.net.au/res/i/L2059/index.html> http://www.k-5mathteachingresources.com/support-files/blanknumberlines.pdf |

**TEACHING AND LEARNING EXPERIENCE**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES |
| □ Explicitly communicate lesson outcomes and work quality.□ **Teach and review** ◾ Numeral and symbol cards to make a multiplication sentence then show the inverse division sentence by moving the numeral cards and using the correct symbol. ◾ Explain rows and columns in arrays. Give students a problem, such as 3×4 and model this problem on graph paper using counters. Emphasize this as 3 groups of 4, so you need three lines with four counters in each line. Also show how this is repeated addition, such as 3×4 = 4+4+4. The students are encouraged to transfer this information to division as repeated subtraction.□ **Define and Reinforce****metalanguage used in the unit:** Multiply, multiplied by product, multiplication, multiplication facts, tens, ones, double, multiple, (factor, shared between, divide, divided by, division, halve, remainder, equals, is the same as, strategy, digit). | LEARNING SEQUENCERemediationS1 or Early S2 | □ Link multiplication and division facts using groups or [arrays](http://syllabus.bos.nsw.edu.au/glossary/mat/array/?ajax), e.g.□ Explain why a rectangular array can be read as a division in two ways by forming vertical or horizontal groups, e.g. 12 ÷ 3 = 4 or 12 ÷ 4 = 3 (Communicating, Reasoning) |
| LEARNING SEQUENCES2 | □ Show numeral and symbol cards with related sentences, e.g.

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| 9 x 2 = 18 |

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| 18 ÷ 2 = \_\_ |

Students represent each sentence with counters.● ● ● ● ● ● ● ● ●● ● ● ● ● ● ● ● ●Ask students to complete the number sentences and explain how the cards are related and record the number sentences. Remind students to check answers against a multiplication chart.□ **Number trio cards** 30 Children can state the four possible calculations. 5 6Alternatively, they can suggest the hidden number when one corner is covered.5 × 6 = 30; 6 × 5 = 30; 30 ÷ 6 = 5; 30 ÷ 5 = 6□ Use a 100’s chart to highlight the multiplication factors for a chosen number on IWB or large chart. Students can highlight their own chart. This can be done for different numbers. □ Investigation: As repeated addition is quicker using multiplication so repeated subtraction is quicker using division. The use of arrays can help with this exercise. For the inverse of 3 x 4 = 12 the students can record the solution in terms of repeated subtraction: 12 – 4 – 4 – 4 = 0. Then they record the solution using the division symbol: 12 ÷ 4 = 3. Continue with practise of this type of operation using number lines: Template: http://www.k-5mathteachingresources.com/support-files/multfacttriangle.pdf  |
| LEARNING SEQUENCEExtension Late S2 or Early S3 | * Use the appropriate [operation](http://syllabus.bos.nsw.edu.au/glossary/mat/operation/?ajax) when solving problems in real-life situations (Problem Solving): Do I need to multiply or divide?
* Use inverse operations to justify solutions (Problem Solving, Reasoning): if I use the opposite operation are the numbers inverted?
* Use the term 'quotient' to describe result of a division calculation, eg 'The quotient when 30 is divided by 6 is 5'
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| **EVALUATION & REFLECTION** | **Student engagement:** **Achievement of Outcomes:****Resources:** **Follow up:** |