**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 ÷ 2  10 ÷ 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.htm  http://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.html  http://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 |
| 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.   |  | | --- | | 9 x 2 = 18 |  |  | | --- | | 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 6  Alternatively, 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 SEQUENCEExtensionLate 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' |
| **EVALUATION & REFLECTION** | **Student engagement:** **Achievement of Outcomes:**  **Resources:** **Follow up:** |