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| **MATHEMATICS** | |  |  | **STAGE 3** |
| **TEACHING AND LEARNING OVERVIE****W** | | | | |
| **TERM:** | **WEEK: 11** | **STRAND: NUMBER & ALGEBRA** | **SUB-STRAND: Multiplication & Division 2** | **WORKING MATHEMATICALLY:**  MA3-1WM, MA3-2WM, MA3-3WMS |
| **OUTCOMES: MA3-6NA** | | **Select and apply mental and written strategies, and appropriate digital technologies, to solve problems involving multiplication and division with whole numbers (ACMNA123).** | | |
| **CONTENT:** | | **Select and apply efficient mental and written strategies, and appropriate digital technologies, to solve problems involving multiplication and division with whole numbers**   * Select and use efficient mental and written strategies, and digital technologies, to multiply whole numbers of up to four-digits by one-digit number * Solves word problems involving multiplication of whole numbers of up to four- digits by one-digit. * Estimates solutions to problems and checks to justify solutions. * Uses a table or similar organiser to record method used to solve problems. | | |
| **ASSESSMENT FOR LEARNING**  (PRE-ASSESSMENT) | | Worksheet – **Multiplication pre-test using the extended form of the multiplication algorithm to multiply two- and three-digit numbers by one-digit numbers and related word problems.** | | |
| **WARM UP / DRILL** | | **Various multiplication fact drills:**   * **Multiples – Count by any number to practise calculating multiples** * **Multiplication Buzz** * **Speed tests e.g. Multiplication Grid, Grid Bingo, Times Table Snap!** | | |
| **TENS ACTIVITY**  **NEWMAN’S PROBLEM** | | Write the multiplication 1655x 3 on the IWB. Ask the students to estimate an answer and have several students explain their strategies. Compare and contrast estimates with actual answer. Which estimates were the easiest to use and why? | | |
| **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** | | Grid paper, raffle tickets, icecream container:  School.discoveryeducation.com/brainboosters/reasoning/saintives.html  Multiplication: [www.missmaggie.org/scholastic/round](http://www.missmaggie.org/scholastic/round) the world\_eng\_launcher.html  http:www.eastiron.org/schools/interactive-resources/ir\_contents/contents/pg/pg5/snaptab.html | | |

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| **WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES** | **GUIDED & INDEPENDENT ACTIVITIES** | |
| * **Explicitly teach** the procedure for estimation and discuss its use.   Practise rounding off as a valuable way of checking answers to algorithm.  Review multiplication facts  Revise 4-digit x 1-digit multiplication using estimation and the formal algorithm.  Revise problem solving strategies using Newman’s prompts.   * **Define and reinforce metalanguage** **used in the lesson** eg estimation, approximation, rounding, actual, operations, multiplication, multiplication facts, multiplied by, product, calculation, possibilities, factor, remainders, strategies, number sentence, algorithm. * **Interactive Games and Activities**   Multiplication Grids  Times-Table Snap!  Super Teacher Worksheets:  Multiplication Tables 0-12, 0-15  Multiplication matching game: www.superteacherworksheets.com/multiplication/multiplication-12s-matching-game\_TWZDZ\_pdf | **LEARNING SEQUENCE**    Remediation  S2 or Early S3 | * **Multiplication Grid Race** Students race to finish a 10X10 grid of multiplication * **Explicit Mathematical Teaching** Revise multiplying two digit by one digit numbers 32 x 6= 30x6 + 2 x6 = Look at estimating skills eg 89 x 32 ≈ 90 x 30 =2700 * **Investigation** Present students with a range of multiplication and division questions and ask them to find the closest estimate from a list of possibles. Express numbers as a product of two other numbers plus some remainder in different ways eg: 32 = 16 x 2 or 32 = 10 x 3 + 2 or 32 = 5 x 6 + 2 or 32 = 9 x 3 + 5 etc This leads in to looking at remainders when a number is divided by a non-factor. Students are asked to express three numbers in four different ways each, using this method. |
| **LEARNING SEQUENCE**    **S3** | * **Introduction**   Review of multiplication facts. Students draw a 5x5 grid containing multiplication number sentences that will give an answer between 1 and 50. The answers may be the same, but the number sentences must all be different.   * **Investigation** Place raffle tickets numbered 1-50 in a box and draw the tickets out. Students colour the squares in their grid that have this answer. * **Whole Class Instruction and Modelled Activities** Write the multiplication 1655x 3 on the IWB. Ask the students to estimate an answer and have several students explain their strategies. Compare and contrast estimates with actual answer. Which estimates were the easiest to use and why?   **Worksheet**   * Students complete a section of worksheet with related examples (4-digit x 1-digit). Encourage to firstly estimate response. Review words and phrases related to multiplication.   **Worksheet**   * Students complete a series of word problems eg Mr Corry runs 4536 each day. How far will he run in 7 days? Estimate and then write an algorithm for each problem and solve it.   **Reflection**   * Discuss why it is useful to estimate before completing a question. * Students from the Extension group share their word problems with the class.   **Assessment** Solving open-ended problems involving 4-digit by 1-digit multiplication. Complete checking table. |
| **LEARNING SEQUENCE**  Extension  Early S4 | * Write a problem, using the numbers 0-9 and solves it. * Create a problem to share with a partner. * Solve the question in the following children’s poem: * As I was going to St Ives….   School.discoveryeducation.com/brainboosters/reasoning/saintives.html |
| **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.