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| **MATHEMATICS** | |  |  | **STAGE 3** |
| **TEACHING AND LEARNING OVERVIE****W** | | | | |
| **TERM:** | **WEEK:**  **12** | **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**   * Selects and uses efficient mental and written strategies, and digital technologies, to multiply whole numbers of up to four digits by one- and two-digit numbers * Estimates solutions to problems and checks to justify solutions * Uses mental strategies to multiply numbers by 10,100, 1 000 and their multiples * Solves word problems involving multiplication * Uses appropriate language to compare quantities, eg ‘twice as much as’ * Uses a table or similar organiser to record method used to solve problems. | | |
| **ASSESSMENT FOR LEARNING**  (PRE-ASSESSMENT) | | Worksheet **– Review of multiplication table facts and mental strategies**. **Multiplication pre-test using the multiplication algorithm to multiply three-digit numbers by one and 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 Grid Challenge, Multiplying Snap** | | |
| **TENS ACTIVITY**  **NEWMAN’S PROBLEM** | | Present students with a range of word problems (see BST and SNAP questions). Help students to draw diagrams, act out and write algorithm from word problems. | | |
| **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** | | Deck of cards, calculators  Speed Grid Challenge <http://www.estiron.org/schools/interactive-resources/ir-contents/contents/pg/pg2/urikamultires,html>  Interactive sites.weebly.com/math.html | | |

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| **WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES** | **GUIDED & INDEPENDENT ACTIVITIES** | |
| * **Explicitly teach** short methods of multiplication using mental strategies, multiplication by powers of 10.   Revise the algorithm for multiplying four-digit numbers by one-digit numbers.  Multiply three-digit numbers by two-digit numbers using mental strategies and the formal extended multiplication algorithm.   * **Define and reinforce metalanguage** used in the unit eg multiplication, mental strategy, algorithm, power, extended, digit, calculation, contracted, multiples, factors. * **Interactive Games**   Speed grid Challenge  A one player game against the clock. Select the number of questions and the time you will allow and then press START. You must now answer the question set at the bottom of the screen by clicking on two of the numbers in the grid. Once you think your answer is correct, click on NEXT to move onto the next question.   * Dice Connect - two player game. The object of the game is to get four counters in either a vertical, horizontal or diagonal line. To cover a number multiply the dice together and then click on the total in the grid. If there is no number left to click the player must pass. | **LEARNING SEQUENCE**    Remediation  S2 or Early S3 | * **Mental multiplication**   Practise mental multiplication with games such as Buzz.  Use multiples of tens as factors eg count by 30s to 500.  **Short methods**   * Research short methods of multiplication and apply to examples. * Multiply by 10. Multiples of 10 always end in zero. * Multiply by 100. Write two zeros at the end of the number. This works because 100=10x10. * Multiply by 1000. Write three zeros at the end of the number. This works because 1000=10x10x10. * Multiply by 50. Multiply by 100 and halve. * Multiply by 25. Multiply by 100 and find a quarter. * Multiply 36x90. (36x100) - (36x10).   **Revise** multiplying four-digit numbers by one-digit numbers using mental and written strategies. |
| **LEARNING SEQUENCE**    **S3** | **Introduction**   * Play Multiplying Snap   Students play in pairs with a deck of cards that has the picture cards and Jokers removed. The cards are dealt equally between the two players. Each student turns over a card, multiplies the two numbers on the cards together, and the first student who says the correct answer keeps the cards. The winner is the student who ends up with the entire pack.   * **Explicit Mathematical Teaching - Multiplication**   Multiply numbers by powers of 10 using a given table. Describe what happens to the number. This will be important when students begin to multiply by two digits.  Multiply three-digit numbers by two-digit numbers using mental strategies and the formal algorithm.  Students multiply numbers by breaking the calculation into two parts eg 32 × 14 = 32 × 10 + 32 × 4.  Students are shown how these can be combined in using the **extended** algorithm.    `  **Investigation**   * Complete examples from IWB.   Present students with a range of word problems (see BST and SNAP questions). Help students to draw diagrams, act out and write algorithm from word problems.     * Assessment Students are given number sentences to write as word problems They complete the extended multiplication algorithm and then break the calculation into two parts to determine the accuracy of their responses. |
| **LEARNING SEQUENCE**  Extension  Early S4 | * Students solve three-digit by two-digit multiplication using the extended or contracted algorithm. Use a calculator to check answers. |
| **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.