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| **MATHEMATICS** | |  |  | **STAGE 3** |
| **TEACHING AND LEARNING OVERVIE****W** | | | | |
| **TERM:** | **WEEK:**  **13** | **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 divide whole numbers of up to four digits by a one-digit divisor, including where there is a remainder * Estimate solutions to problems and check to justify solutions * Solve word problems involving division. * Use a table or similar organiser to solve problems. | | |
| **ASSESSMENT FOR LEARNING**  (PRE-ASSESSMENT) | | * Worksheet – **Division review worksheet:** 1,2, and 3-digit quotients with/without remainders; dividing 3-digit quotients by 10; 3digit quotients with zeros; 3 digit quotients with trading and finding averages. | | |
| **WARM UP / DRILL** | | **Various multiplication and division fact drills:**   * **Multiples – Count by any number to practise calculating multiples** * **Number snap** * **Speed tests eg Around the clockface against time, Toss the ball, Tell all you can – facts based on card chosen, Hurdle race** | | |
| **TENS ACTIVITY**  **NEWMAN’S PROBLEM** | | The teacher poses the scenario: ‘A farmer has 49 eggs. He needs to put them into cartons that each hold a dozen eggs, to send to market. How many cartons does he need?’ | | |
| **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** | | Division: www.kidsmathgamesonline.com/division.html  The Divider: Whole Number Remainders TaLe Reference Number: L2008 <http://tlf.dir.det.nsw.edu.au/learningobjects/Content/L2008/object/index.html>  [www.cool.math.com.games.com/0-cool-math-games and problems.html](http://www.cool.math.com.games.com/0-cool-math-games%20and%20problems.html) Number Monster Multiplication and Division | | |

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| **WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES** | **GUIDED & INDEPENDENT ACTIVITIES** | |
| * **Explicitly teach** the formal algorithm for dividing a number with three or more digits by a single-digit divisor.   Review the 5 question types for division: sharing/partition, rate, factor, grouping/quotient and sub-division.   * **Define and reinforce metalanguage** used in the unit: factor, product, divisor, dividend, quotient, remainder, estimation, number sentence, algorithm, share, rate group, round up, round down, trade, single digit * **Interactive Games and Activities**   Division – Kids Maths Games  The Divider: Whole Number Remainders  Number Monster Multiplication and Division  Timed Division: [www.coolmath.com/games/timernator/division/Timerator-division.html](http://www.coolmath.com/games/timernator/division/Timerator-division.html)  Super Teacher Worksheets  Long Division 4-digit dividends by 1-digit  Division crossword 4d x 1d  Rewrite the problem and solve eg 8503 divided by 3 | **LEARNING SEQUENCE**    Remediation  S2 or Early S3 | * **Oral and mental activities** Division around the clock Write numbers around the edge of the clock. A student takes the challenge to supply the answers and be timed. Variation: Supply numbers with a remainder. Reward those who are fastest and improving. * Today’s Number Write the number for the day on the board (eg 3). Students write as many division number sentences as they can, that will give this answer, in one minute. Discuss any patterns found, Relate number sentences to multiplication. * **Explicit Mathematical Teaching-Division** Complete number sentences involving division with missing elements. Revise estimation skills. Present students with a table showing a range of multiplication and division questions and ask them to find the closest estimate from a range of possible answers supplied. Express numbers as a product of two other numbers plus some remainder in different ways eg: 53= 5x10+3. Review division based on pre-testing. |
| **LEARNING SEQUENCE**    **S3** | * **Introduction** Remainders Count Students have 3 numeral dice and paper to record on. In turns, students roll the dice and using the three numbers make a division number sentence, eg. if a 6, 4 & 5 were rolled then a student could make 46÷5. The student determines the answer and keeps a tally of any remainders. In this case it would be one. However if the student makes 45 ÷ 6, the remainder would be 3. The remainders become the student’s score. The winner is the first to reach a score of 20 * **Explicit Mathematical teaching – Division** Dividing a number with three or more digits by a single divisor using mental or written strategies. Recognising and using different notations to indicate division. Students solve problems that involve dividing a three-digit number by a one-digit number using written strategies, showing remainders as a fraction: Demonstrate that the inverse operation is multiplication by obtaining the original number eg. 204 ÷ 6 = 34 -> 34 x 6 = 204 (show using the formal methods that this is true) Show how division with remainders becomes a multiplication with an addend. Eg. 19 ÷ 3 = 6 r 1 means 19 = 6 x 3 + 1. Express remainders as fractions. 19 ÷ 3 = 6 1/3 Provide examples of both simple multiplications and divisions expressing remainders as fractions. * I**nvestigation** Rounding up division: The teacher poses the scenario: ‘A farmer has 49 eggs. He needs to put them into cartons that each hold a dozen eggs, to send to market. How many cartons does he need?’ Possible Questions : ❚ How many eggs will fit into each carton? ❚ What strategy did you use to find the solution? ❚ Can you think of another way that the farmer could pack the eggs? Students record the strategies used including inverse operations to check answers. * Assessment: Worksheet real-life problems drawn from the 5 question types for division. Students applying checking process. |
| **LEARNING SEQUENCE**  Extension  Early S4 | * The teacher poses the scenario involving larger numbers of eggs and different-sized cartons. Students write their own problems involving division with remainders. They publish their work using a computer software package eg Powerpoint, Kidspix, Slideshow. Class rate the problems and highest rating is set as homework. |
| **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.