**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 7 | STRAND: NUMBER AND ALGEBRA | **SUB-STRAND:**  MULTIPLICATION AND DIVISION 1 | **WORKING MATHEMATICALLY:**  MA3-1WM, MA3-2WM, MA3-3WM |
| OUTCOMES: MA3- 6NA | | Selects and applies appropriate strategies for multiplication and division, and applies the order of operations to calculations involving more than one operation. | | |
| **CONTENT:** | | **Solve problems involving division by a one-digit number, including those that result in a remainder.**  - Use mental and written strategies to divide a number with three or more digits by a one-digit divisor where there is a remainder, including:   * dividing the thousands, then hundreds, then tens then ones * use formal algorithms * explain why the remainder in a division question is less than the divisor   **Use estimation and rounding to check the reasonableness of answers to calculation.**   * Use estimations to check the reasonableness of answers for multiplication and division questions | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | Division Worksheet-  Division problems: word based and number, with and without remainders.  Estimation problems. | | |
| WARM UP / DRILL | | * IWB display of the various ways to visually represent division * IWB match up division metalanguage with the correct definitions * Game: in pairs students complete division problems using dice and flash cards with varying numbers, and take turns to record their answers. Students check their answers using calculators. | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | | ‘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 | | Worksheets, backing paper and template to make division spinners, Multiplication grid, Dice and number cards, IWB, class wiki, Poster paper, textas and coloured pencils, canteen sales and stock lists, computers, Online maths division problems from the IXL Website: <http://au.ixl.com/math/year-5>,  How to start a wiki guide- http://www.wikihow.com/Start-a-Wiki | | |

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES | |
| Explicitly teach and review  * Using different notations to indicate division. * Recording remainders as fractions. * Recording remainders as decimals. * Remainders are always less than the number divided by (the divisor). * **Define and reinforce metalanguage** divide, division**,** divisor , fraction, decimal * **Revise**   Talking about problem solving and how to record my problem solving. Model the thinking process behind division problems.   * **IWB game**   Students solve division problems which include remainders in the solution. Students record their remainders as fractions or decimals. Students take turns to pick which way it will be answered each time.   * **Update class wiki**   Students reflect on what they have learned about division each lesson, and update the class wiki with any new information   * **Update class display**   Students add any new metalanguage definitions, and new knowledge | LEARNING SEQUENCE 3RemediationLate S2 | Recognising fractions and decimals, especially those most commonly used.  Basic equivalence of fraction to decimal (e.g. 0.1 is the same as 1/10) |
| LEARNING SEQUENCEEarly S3 | **Whole class instruction and modelled activities**  **Using Decimals and fractions to record remainders**   * **Scenario Challenge** ‘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?’ Students record the strategies used to solve the problem. *Variation:* The teacher poses the scenario involving larger numbers of eggs and different-sized cartons. Record results in class wiki.   * **Worksheet:** students complete a variety of division problems and record remainders as fractions and as decimals. * **Game:** students use flash cards with various numbers, and roll the dice to create a variety of problems to solve. Students practice recording their answers using fractions or decimals. Alternatively students create a spinner with the range of numbers on the spinner and numbers 0-9 on flash cards to choose from/ or a second spinner. * **Game:** This can be completed as a class first where the lollies/ or other items are divided up equally. Students divide up items equally among class members. This can also be completed in smaller groups. Students reflect on the way in which the remainder is always smaller than the number being divided. * **Class display:** students explain in their own words why the remainder is always less than the number divided by. Students can choose an example, or demonstrate division to show students what it means first (see class game). * **Investigation:** students find real life examples of dividing numbers where decimal points result. For example when grocery. * **Investigation:** students use their calculators to find out the decimal equivalent of half, a quarter, and other more commonly used fractions. * **Game:** students match up various decimals to their equivalent fractions, using flash cards. Students check their answers with a calculator.   Assessment: worksheet including a range of division problems, and demonstrate they can record the remainders as decimals or fractions.  Students contribute to the class display an example of when they would use division in a real life situation (or give students a set example), including how they would work out the problem and record it from start to finish. |
| LEARNING SEQUENCEExtensionLate S3 | Students complete number and word problems involving remainders.  Students use calculators to check their answers  OR  Students create their own number and word problems involving remainders and use calculators to check their answers. |
| **EVALUATION & REFLECTION** | Student engagement :  Resources:  Achievement of Outcomes:  Follow up: |