**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 6 | 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 no remainder, including:   * dividing the thousands, then hundreds, then tens then ones * use formal algorithms   **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 | | * students solve division problems from real life examples of dividing larger numbers. Use school community examples such as information from the school canteen regarding ordering stock, use copies of stock lists, sales results and leftover stock. | | |
| 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 teachHow to use mental and written strategies to divide a number with three or more digits by a one-digit divisor where there is no remainder. Including dividing the hundreds, then the tens then the ones; and to use the formal algorithm (see page 199 maths syllabus).Problem solving, when to use division to solve a word problem, and the mental process behind division.  * + Record remainders as fractions and decimals * **Define and reinforce metalanguage** hundreds, tens, ones, divide, division**,** divisor * **IWB** demonstrate theprocess of completing division with larger numbers. Students to take turns * **Update class wiki**   Students reflect on what they have learned about division each lesson, and update the class wiki with any new information   * **Class quiz** in groups students answer division questions, * **Class Challenge** students create adivision board game. Students need to include a range of problems in varying levels of difficulty, and to consider the group who would use the game. | LEARNING SEQUENCE 2RemediationLate S2 | Model division and remainders using concrete materials.  Communicating and recording mental strategies used for solving multiplication and division problems.  Using a calculator to check answers, and round answers to the nearest decimal point. |
| LEARNING SEQUENCEEarly S3 | **Whole class instruction and modelled activities**  **Division – of numbers with three or more digits and a single one digit divisor**   * **Worksheet:** students complete a worksheet with problems involving division of numbers with three or more digits and a one digit divisor. Alternatively the teacher can set up the questions on the IWB for students to record in their maths books. * **Problem solving using technology:** model to students the thinking process behind completing the division problems, and how you can record each step in writing. Give students a problem to solve. Students write down the process they use to solve the division problems. Students then explain in a video with a partner or by themselves, how they solved the division problem. * **Worksheet:** students complete work sheet where they identify whether division or multiplication is required. * **Game:** students choose a card which has a number with three or more digits. Students roll a dice to select the number they will divide the larger number by. Students record their answers. This can be completed in pairs with discussion of how they will solve the problem. Whole class demonstration and then students independently. Students can check their answers with a calculator. To modify this game, start with lower numbers and progress to the higher numbers. * **Group activity defining the metalanguage-** students add definitions of the metalanguage used, using their own words. This can be completed as a group activity to encourage discussion of the meaning. Students need to agree on what they think it means and teacher to check before it is added. Students use word to publish their work, and find a matching image. * **Investigation:** students solve division problems from real life examples of dividing larger numbers. Use school community examples such as information from the school canteen regarding ordering stock, use copies of stock lists, sales results and leftover stock.   **Assessment:** Worksheet with a range of division questions (divide a number with three or more digits by a one digit divisor), and students define the metalanguage in their own words.  Student videos showing their problem solving process to solve division problems |
| LEARNING SEQUENCEExtensionLate S3 | **Extension:**   * Students complete division problems with more than three digits, and create their own written problems to match the questions.   OR   * Using data from real life where division has been used, students create their own division problems. Students record how they worked out their answers. Students check their answers using a calculator. If there are a number of students completing extension work they can then swap their questions with other students. |
| **EVALUATION & REFLECTION** | Student engagement :  Resources:  Achievement of Outcomes:  Follow up: |