**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 9 | STRAND: NUMBER AND ALGEBRA | **SUB-STRAND:**  **MULTIPLICATION AND DIVISION 1** | **WORKING MATHEMATICALLY:**  MA3-1WM, MA3-2WM, MA3-3WM, MA3- 6NA |
| 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.**   * Check the answer to calculations using digital technologies   **Use estimation and rounding to check the reasonableness of answers to calculation.**   * Use estimation to check the reasonableness of answers to multiplication and division calculations. | | |
| 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 | | In pairs students interview each other about how they solved an estimation problem, showing what they were thinking as they completed each step. This can be recorded on video and added to the class | | |
| 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  * Using estimation to check the reasonableness of answers to multiplication and division calculations   **Define and reinforce metalanguage used in this unit e.g.**  **IWB games**   * whole class estimation game. Students in groups score points for the closest estimation answer in response to variety of division questions (mixed ability groupings).   **Team Quiz**   * whole class quiz. Students take turns to answer estimation questions. Question is posed then the teams talk to each other about what they think is the right answer and write it on a card. Students then hold up their card.   (as it is written they cannot change it once hearing the other teams answer)  Student with the closest estimation wins a point for their team. Select students to take turns at tallying up the points. First team to 15 points wins. Mixed ability groups.  **Update class display**   * Students add any new metalanguage definitions, and new knowledge | LEARNING SEQUENCE 5RemediationLate S2 | Students practice making estimations before they solve problems.  Students communicate the problem solving process when working on estimation.  Students use concrete materials to assist with solving estimation problems. |
| LEARNING SEQUENCEEarly S3 | Whole class instruction and modelled activities  **Estimation**   * **Worksheet:** students complete a variety of estimation problems and include their working out processes. * **Interview:** in pairs students interview each other about how they solved an estimation problem, showing what they were thinking as they completed each step. This can be recorded on video and added to the class wiki. * **Game:** Game Showstudents are in groups to play this game. A class quiz where there are four students who are the contestants. Display questions on the IWB on a slideshow.   Students each have a buzzer/ sound to answer the questions. This can be modified with a “lifeline” feature where students can consult their team for an answer. Once “out” students then are replaced by another member of their team. Choose a student to record a points tally on the white board/ IWB.   * **Game:**  Spin, Estimate and Check**.** Students make two spinners, one with three-digit numbers within a given range (e.g. 850 to 950) and the other with the numbers 2 to 9. Student A spins the two spinners and estimates the answer when the three-digit number is divided by the single-digit number. e.g. 920 ÷ 7 is about 130. Student B checks their answers with a calculator. Students swap roles. Optional- points given for closer estimates * **Investigation for Class display:**  students give examples of when they use estimation in their everyday lives and add this to the class display. Photos can be taken and added or students can draw pictures. Students can publish their examples using digital tech. * Assessment: Students complete a worksheet with a range of estimation problems and including a section to demonstrate their problem solving process.   Observation of student participation in problem solving interviews. |
| LEARNING SEQUENCEExtensionLate S3 | Students complete more challenging estimation problems involving higher numbers with three or more digits  Students create their own estimation problems. This could be incorporated into a game or quiz that they create. |
| **EVALUATION & REFLECTION** | Student engagement :  Resources:  Achievement of Outcomes:  Follow up: |