**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: | STRAND:NUMBER AND ALGEBRA | **SUB-STRAND:**  WHOLE NUMBERS 1 | **WORKING MATHEMATICALLY:**  MA3-1WM & MA3-2WM |
| OUTCOMES: MA3-4NA | | **Orders, reads and represents integers of any size and describes properties of whole numbers.** | | |
| **CONTENT:** | | **Recognise, represent and order numbers to at least tens of millions**   * use numbers of any size in real-life situations, including in money problems   **>** interpret information from the internet, the media, the environment and other sources that use large numbers (Communicating, Reasoning)  LICTPSCWE   * recognise different abbreviations of numbers used in everyday contexts, e.g. $350 K represents $350 000 LWE * [round](http://syllabus.bos.nsw.edu.au/glossary/mat/rounding/?ajax) numbers to a specified place value, e.g. round 5 461 883 to the nearest million | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | Write a series of large numbers on the board (between 4 and up to 12 digits long).  Students are to copy the numbers and identify the value of certain digits within each number. For example: what is the value of the 3 in 973 456 285, etc. Students then round each number to a specified place value. | | |
| WARM UP / DRILL | | **The Nasty Game (Counting On pg. 107-108):** This game must be played with four players and four games must be played. One player records the rolls and the scores. Players take turns to roll a die to try to make the highest number they can except that players are allowed to place the numbers they roll in their opponents’ squares instead of their own. For example, a player may place a “1” in an opponent’s hundreds column. Note: Players must explain to the scorer where they want to place the number they have rolled “*Put the 2 in Susan’s hundreds column*.” | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | | A car travels 130 kilometres in 2 hours. How far will the car travel in 5 hours at the same speed? | | |
| 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 | | Counting on Teaching Activities: <https://portalsrvs.det.nsw.edu.au/f5-w-68747470733a2f2f6465747777772e6465742e6e73772e6564752e6175$$/curr_support/maths/counting_on/Learning_Resources/pdf/co_pv.pdf>  Selection of dice - six and ten sided, sets of numeral cards 0-9, set of numeral cards 1-1000  IXL Maths - Online Maths Practice and Lessons (also available for free on iTunes IXL Maths Practice) <http://au.ixl.com/> | | |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES | |
| * The abbreviation K comes from the Greek word *khilioi* meaning thousand. It is used in many job advertisements (e.g. asalary of $70K) and as an abbreviation for the size of computerfiles e.g. 26K (kilobytes). * Discussion of abbreviations used e.g. $350K * Revise place value columns. * **Blank Numbers**   Write up 10 numbers on the board, partition into their component parts but omit some of the numbers  Eg 56321 = □ + 6000 + □ + 20 + 1  89035 = 80000 + □ + □+ 30 + 5  345 678 = 300 000 + □ + 5 000 + □ + 70 +8  Ask children to choose 3 numbers and decide what is missing.  Ask them then to come out and fill in the missing numbers on the board, explain their methods and show the number, using the place value chart (refer to attached sheet)  **Questions**  How do you know whether you’re right or not?  What’s the quickest way to check?  **Variations/Extensions**  In pairs children give each other questions to work out. Give pairs of children a calculator each. They key in a 4 digit number and have to try to get their calculator to display zero by subtracting from one place value column at a time. For example the display reads 4025 – to get it to zero, first 4000, then 20, then 5 has to be subtracted. | LEARNING SEQUENCERemediationLate S2 | * **Make Some Numbers Remedial Activity:** Students make 3 digit numbers as per class activity but without using the “0” numeral card. Numbers can be rounded to the nearest 10. |
| LEARNING SEQUENCES3 | * **Make 100 (Counting on pg. 94-96)**: The aim is to score 100 or as close as possible without ‘busting’ (passing 100). Students take turns to roll a die. Students may choose to multiply that number by 10 or score it at face value, e.g. 2 may be scored as 2 or 20. Once a decision has been made it cannot be changed. The die is rolled again. If the number is (say) 4, students decide to score this as 4 or 40 and record it, completing the progressive total. This continues until 9 rolls have been completed. Note: All rolls must be used. The student who scores 100 or the number closest to (but below) 100 wins. * **Watch YouTube Clip of “We will Round You”** * **Make Some Numbers (Counting on pg. 103).** In pairs, students deal themselves three single-digit cards. Students write down the six possible numbers that can be generated using those three digits. If a zero is   selected, then include the numbers with zero in the hundreds place. Students then each order their six  numbers from smallest to largest and record how many groups of ten could be formed with the smallest  number. Students round their numbers to the nearest 10 or 100. Pairs of students swap their solutions for  checking.   * IXL Maths - Online Maths Practice and Lessons (also available for free on iTunes IXL Maths Practice) <http://au.ixl.com/> Students complete place value activities. * **Investigation:** Students research all of the terminology that uses the prefix *kilo*. They are to write the words, what they mean and what they are used for. * **Assessment:** Individually, students roll a 0-9 die as many times as they can to make the largest number they can read to the teacher. They round the number to the nearest place value decided by the teacher. |
| LEARNING SEQUENCEExtensionLate S3 | * **Make Some Numbers Extension Activity:** Students make 4 and 5 digit numbers and record how many groups of 100 or 1000 they can make. Numbers can be rounded to the nearest 10, 100, 1000, 10 000. |
| **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.