**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** * apply an understanding of [place value](http://syllabus.bos.nsw.edu.au/glossary/mat/place-value/?ajax) and the role of zero to read and write numbers of any size L
* state the place value of digits in numbers of any size
* arrange numbers of any size in ascending and descending order
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| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | **Place Value Buzz -** Students stand in a circle. Starting at “ones”, students take turns stating the order of place value up to “hundreds of millions”. After “hundreds of millions” has been said, the next student must say “buzz”. When students make an error, they must sit down. Play continues until there is one student left standing, and they are declared the “Place Value Champion” of the day. |
| WARM UP / DRILL | **Count - Off -** Roll three ten-sided (decahedron) die. Have the students start counting from the number rolled, adding ten, hundred, or thousand to the count each time. Then count backwards by tens, hundreds, thousands. Have one student select a number and call out the number. Once the student calls out the selected number, the rest of the class continuecounting by adding ten, hundred, or thousand each time.  |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  | Ali bought a gelato. It cost $3.20. He paid for it with a $5 note.What is the least number of coins he should receive as change? |
| 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
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| RESOURCES | “Place Value Story” can be found at: <https://www.youtube.com/watch?v=qOgWFBVdots>Counting on Teaching Activities: [https://portalsrvs.det.nsw.edu.au/f5-w-68747470733a2f2f6465747777772e6465742e6e73772e6564752e6175$$/curr\_support/maths/counting\_on/Learning\_Resources/pdf/co\_pv.pdf](https://portalsrvs.det.nsw.edu.au/f5-w-68747470733a2f2f6465747777772e6465742e6e73772e6564752e6175%24%24/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 |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES |
| * Students need to develop an understanding of place value relationships such as: 10 thousand = 100 hundreds = 1000 tens = 10 000 ones.
* **Watch YouTube clip of the “Place Value Story”.** Explain that this is an American clip and that in Australia, we do not use commas when writing large numbers.
* Explain that large numbers are written in groups of three starting from the ones using spaces not commas. Teach that groups of three belong to millions, thousands and ones and this determines the name of the number e.g. Two hundred and fifteen million four hundred and twenty six thousand eight hundred and ten. Identify groups beyond the millions.
* ***Number People***: Make number cards with the digits 0-9. Hand out, for example, five/six/seven cards to students. Without speaking, the students are asked to make the largest number, smallest number, the smallest odd number etc. Extend range of numbers.
* Students predict the total, then investigate: How many four/five/six digit numbers can be made using the digits 8, 2, 0, 3, each once only? Extend to combining more digits.
 | LEARNING SEQUENCERemediationLate S2 | * **Ordering Numbers to 1000 on washing line (string)**

 Hand out several number cards to each child from a shuffled pack of 1-1000 cards. First ask the children, in  pairs, to order their cards. Then name a starting number and an end number and ask children to come out and  place their cards in order on the string(washing line). Repeat for different sections of the number line. For  example, start: number 350 and end number 500. Other children are asked to place their numbers in between  350 and 500 in turn. |
| LEARNING SEQUENCES3 | * **Highest Number (Counting On pg. 105-106)**

 **1.** Students play in pairs, sharing one score sheet. Players take turns to roll a die to try to make the highest  number they can. Once a number has been placed in a column its position cannot be changed. The student  who makes the higher number wins that game. **2.** Students play several games to determine an overall winner. **3.** The teacher ties the lesson together by asking, *What is the largest possible number you can score*? (9999 if  you are using 0–9 dice and playing a 4-digit game.) *Who scored closest to this*? *What was your highest number*?  *What was your lowest number*? **4.** Some of the results may be written on cards and pinned onto a “clothesline” to help students order 3-digit  and 4-digit numbers.* **The Nasty Game (Counting On pg. 107-108)**

 **1.** Students play in groups of 4 and 4 games must be played. Play is similar to highest number except that  players place numbers in their opponent’s score columns.* **Investigation: Ordering Numbers:** Students could:

 - Order countries according to area or population  **-** Student writes a number and tells the class what range it falls in eg between 400 000 and 500 000. Other students guess and are told higher, lower until it is reached **-** Find missing numbers from number patterns eg 999 999, 989 999, -------, 969 999, --------, --------, etc.* **Assessment:** Give students 5 digit cards each and ask them to create and record the largest, the second largest, the smallest and two other numbers. Order these in descending order. Explain how the second largest number was determined.
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| LEARNING SEQUENCEExtensionLate S3 | * Highest Number and The Nasty Game can be played with 6 or 10 sided dice. Incorporate numbers up to 9 digits.
* Players can order the numbers from highest to lowest and identify the value of various digits within their number e.g. “the value of 6 in 239 560 482 is 60 thousand”
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| **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.