**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: 1 | WEEK: 2 | STRAND: Whole Number | **SUB-STRAND:** Addition and Subtraction | **WORKING MATHEMATICALLY:** MA3-1WM, MA3-2WM, MA3-3WM |
| OUTCOMES: MA3-5NA | **Selects and applies appropriate strategies for addition and subtraction with counting numbers of any size.**  |
| **CONTENT:**  | **Use estimation and rounding to check the reasonableness of answers to calculations (ACMNA099)**\* Round numbers appropriately when obtaining estimates to numerical calculations |
| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | **Verbal discussion**- Teacher and class discuss when we would use estimation during everyday contexts eg: adding up shopping, buying materials, time, large numbers etc. **Work sample:** Ask students to round larger numbers to the nearest million- 5 sample questions. Once the students answer these 5 rounding questions, the teacher will show 3 algorithms on the board for 5 sec each. Students must estimate their answer and record. Mark together as a pre-assessment and prompt the students to share their strategies.  |
| WARM UP / DRILL | **The students will begin by partaking in some mental computation questions. (Estimation)** The teacher will use a calculator to ask the students a long number question (either addition or subtraction) for example: 320+ 540 + 770 = The students will have limited amount of time to solve. In solving their answer- most students will try to be exact. At the end of the time ask students how we could find the answer quicker- ***by using estimation***- carry out a different question and ask students this time to estimate (record answers)- student who is closest will win. **Rounding Game-** Students will stand on a vertical line. The teacher will read out a number. Students must jump on either side of the line to indicate the nearest thousand, million etc- for example: the teacher will have 2 million on one side of the line and 3 million on the other- the teacher will then read out 2 567 345- students will then be required to jump to the corresponding side of the nearest million (3 million). Use thousands, tens of thousands, million etc place values here depending on students understandings.  |
| QUALITY TEACHING ELEMENTS | **INTELLECTUAL QUALITY** | **QUALITY LEARNING ENVIRONMENT** | **SIGNIFICANCE** |
| * Deep knowledge
* Deep understanding
* Problematic knowledge
* Higher-order thinking
* Metalanguage
* Substantivecommunication
 | * 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 | -<http://www.mathsisfun.com/rounding-numbers.html> Rounding questions and introduction. -<http://www.mathplayground.com/howto_round.html> Rounding video -<http://www.aaamath.com/dec44bx2.htm> Rounding decimals game | -<http://www.modernchalkboard.com/rounding.html> Interactive Rounding games -Number line sheets – found at <http://themathworksheetsite.com/numline.html> -Rounding sum assessment sheet – Extra Interactive Resource- <http://www.oup.com.au/__data/assets/file/0019/154045/Numberline.swf>  |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES |
| * **Explicitly communicate lesson outcomes and work quality.**

Teacher demonstration of rounding- What is rounding? Rounding is a mental math strategy for adding and subtracting numbers. When you round, you will likely need to adjust your answer to get the exact answer. Show students examples:29 + 52 can be rounded to 30 + 50 – how do we change/correct our estimation?See <http://www.mathsisfun.com/rounding-numbers.html> for intro and sample Q’s* **Teacher will revise** rounding as a class using the interactive whiteboard games from <http://www.modernchalkboard.com/rounding.html> Teacher will demonstrate how to round and guide and scaffold to students.
* **Teacher will show** students a video <http://www.mathplayground.com/howto_round.html> Together as a class after the video- carry out the same process on the board and then allow students to independently attempt a question using the same strategies, first in pairs and then individually. (Have sample numbers ready.)
* **Rounding with decimals.** Teacher will demonstrate how to round with decimals using samples on the board and <http://www.aaamath.com/dec44bx2.htm>
 | LEARNING SEQUENCERemediationS2 | * Use the same activities with smaller numbers.
* Students will need hands on tasks and demonstrations from the teacher
* Use place value charts as demonstration of rounding
* Students will be shown a fast food catalogue where they must round decimals with one place and work out approx. how much money they need.
* <http://www.oup.com.au/__data/assets/file/0019/154045/Numberline.swf>
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| LEARNING SEQUENCES3 | * **Worksheet-** Students will independently work through a rounding worksheet (to the nearest thousand) – see attached. <http://www.math-aids.com/Rounding/>
* **Written algorithms-** Students will carry out basic addition and subtraction algorithms using larger numbers. They must round the answer to the nearest thousand, million etc. (written by teacher on the board- teacher decides on rounding place value- record in maths books)
* **Students are given a number line each (visual/practical task)-** either thousands, tens of thousands, hundreds of thousands, million etc. The teacher will read out a number and the student must place a counter where they believe that number best sits on the number line. Students must then record which number the presented digit is closer to (rounding) (round to the nearest million, round to the nearest thousand etc)
* **Rounding when shopping (using decimals) -** Students are shown a series of shopping lists on the board and must round to the nearest whole dollar. There will be time limits. Students will record their answers in their books and share answers and discuss strategies at the end. Students will also look at decimal place value to help in their round- tenth, thousandth, hundredth
* **Assessment :** Students complete the ‘Rounding to Sum’ assessment sheet. Works with 3 digit numbers using addition and subtraction and rounding the final answer. Collect as work sample assessment.
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| LEARNING SEQUENCEExtension Early S4 | \* Use larger numbers and a mixture of decimals and whole numbers in the same calculations. Rounding to various place values and use units rather than place values. Rounding fractions could also be introduced. What is 50 1/2rounded to the nearest whole number? |
| **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.