**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

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| TERM:  | WEEK: 3 and 4 | STRAND: Number and Algebra  | **SUB-STRAND:** Addition and Subtraction 2 | **WORKING MATHEMATICALLY:**  |
| OUTCOMES: | **›** describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions MA3-1WM› selects and applies appropriate problem-solving strategies, including the use of digital technologies, in undertaking investigations MA3-2WM› gives a valid reason for supporting one possible solution over another MA3-3WM› selects and applies appropriate strategies for addition and subtraction with counting numbers of any size MA3-5NA |
| **CONTENT:**  | * + - Solve addition and subtraction word problems involving whole numbers of any size, including problems that require more than one operation.
		- Record the strategy used to solve addition and subtraction word problems.
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| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | Students attempt to answer the following question.* I borrowed $650 000 dollars from the bank. I bought a block of land for $212 345 and the house I decided to build will cost $289 768. How much money will I have left?
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| WARM UP / DRILL | Game: **501**In pairs or small groups students take turns in rolling two-three dices. (You may use dices that have higher numbers on them depending on the ability of your students/ group) Each time they roll their dice they calculate their score and **subtract** it to their previous rolled score. The student to reach 501 first wins the game. Their last roll must add up to exactly 501. |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  | Circle Champion: Sit your students a circle. Choose to student from the circle and ask them to sit in the middle. Choose 2-3 appropriate number dices suitable for the ability of your students and roll the dice between the two students. The first student to answer the sum correctly wins. The losing student sits back in the circle and the next student enters to compete against the winner. If the winner wins five times in a row then they become a circle champion and then two new students are chosen to compete.  |
| 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 | Appendix A-F |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES |
| *1)*At this Stage, mental strategies need to be continually reinforced and used to check results obtained using formal algorithms. Students may find that their own written strategies that are based on mental strategies may be more efficient than a formal written algorithm, particularly for the case of subtraction. Students need to discuss and explain possible approaches and compare them to determine the most efficient. Present a range of problems and students ask themselves "What is the best method to find a solution to this problem?Use "Newman's Analysis" questions.Review language for addition and subtraction.Demonstrate using a formal written algorithm using place value - stress the setting out in columns.Add numbers with different number of digits highlighting the importance of maintaining the place value columns.Have students estimate answers before completing addition and subtraction algorithms.Use inverse operations as a checking strategy.Appendix A and B.*2) Write the following problem on the board.**Sam had $75 000 saved. He bought a speed boat for 57435 and added a stereo system with speakers for$3678. He also boughta trailer for the bat which cost $11233. How much money did Sam have left?*Break the students into small groups and ask them to think about the following questions before answering the problem.What do you have to find out? What information do you have? Do you need all of the information in the problem? Have you highlighted the key information? What kind of sum will you make? Why do you think that? Will you set your sum in columns? Which numbers will be in the tens column? Which numbers will be in the ones column? EtcStudents complete the problem in their groups and then bring the groups back together and share their findings.Calculator Problems*3)*Estimate first then use a calculator. Solve as a whole class and discuss how we obtained to the answer.*A stadium contained 27685 seats. 15306 seats were filled. How many seats were empty?**There were 53685 trout in a hatchery. If 13987 trout were sold to farmers, how many trout were left in the hatchery?**Josie had 11493 stickers. To win a prize in a sticker collection competition she needed to collect 20000 stickers. How many more stickers did she need to collect?* ***4)***Write three price tags on the board over $10 000 and ask the students to create their own problem that involves addition and subtraction. They also need to explain writing how to solve the problem the most efficient way. Have some students share their problem and solutions with the class. | *LEARNING SEQUENCE**Remediation**S2*  |  |
| *LEARNING SEQUENCE**S3* | **Lesson 1.** **Calculator Race**Give students a series of addition combinations of various numbers. One group can add these numbers using pencil and paper another group could use calculators and a third group could try and solve the problems mentally. Students will come to realise that the most efficient strategy to solve addition problems varies according to the difficultly of problems. Appendix C**Lesson 2. Price Tags**Write a variety of price tags on the board over $10 000 and ask the students to create their own addition and subtraction word problem. Students then ask another class member to solve their problems. Once they have solved it they can share their problems with another class member. At the end of the lesson students may share their strategies with the whole class and they obtained the answer.**Lesson 3.** **Utilities budget plan**Tell the students that they are going to investigate the average utility costs for a family in their community. In small groups the students will have to determine the data they need to collect, how they will they collect the data, how they will use the data to solve the problem, and how they will present data in a report. Students collect the information they require and based on what they collected determine the average costs for a families utilities for a quarter in our local community. Students present their report to the class. Have discussions around how each group obtained their answers. Appendix D**Lesson 4.**Using excel spread sheet show students show they can present their utilities budget in a digital form. Show the students how to itemise each utility plus auto sum the total amount, and show the total expenditure. Tell the students that will need to itemise each utility.(Don’t allow them to group items) They will need to show the quarter average and how much savings a family would need to put aside to cover the cost of their utilities. Appendix E*Investigation:* |
| *LEARNING SEQUENCE**Extension* *S4* |  |
| ***EVALUATION & REFLECTION*** | *Students samples, teacher observations, Students Excel Spread sheets, Utility Budget Plans, Appendix F, Appendix F* |

* *All assessment tasks should be written in* ***red*** *and planning should be based around developing the skills to complete that task.*
* *Assessment rubri*cs or marking scale should be considered.