**MATHEMATICS STAGE 1**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: 1 | WEEK: 8 | STRAND: Number and Algebra | **SUB-STRAND:** Addition and Subtraction 1 | **WORKING MATHEMATICALLY:**  MA1-1WM & MA1-3WM |
| OUTCOMES: MA1-5NA | | **MA1-5NA: Uses a range of strategies and informal recording methods for addition and subtraction involving one-two digit numbers**  **MA1-2WM: Uses objects, diagrams and technology to explore mathematical problems** | | |
| **CONTENT:** | | Represent and solve simple addition and subtraction problems using a range of strategies, including counting on, partitioning and rearranging parts:   * Use the terms ‘add’, ‘plus’, ‘is equal to’, ‘take away’, ‘minus’ and the ‘difference between’ * Recognise and use symbols for plus (+), minus (-) and equals (=) * Record number sentences in a variety of ways using drawings, words, numerals, and mathematical symbols * Recognise, recall and record combinations of two numbers that add to 10 * Investigate and generalise the effect of adding zero to a number, eg ‘Adding zero to a number does not change the number’ | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | There are 4 pencils and 5 pencils. How many pencils are there? Ask students to record two number sentences that give the answer.  4 + 5 = 9  5 + 4 = 9  9 – 5 = 4  There are 10 cars and 5 drive away. How many cars are left? Ask students to explain how they got the answer to record a number sentence. | | |
| WARM UP / DRILL | | Draw a number line on the board with a variety of numbers missing. Ask students to fill in the missing numbers and explain how they knew where the missing numbers went. Eg, the number line could have 8 \_\_ \_\_ \_\_ 12. Students could explain that 10 is two more than 8 and two less than 12. | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | |  | | |
| 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 | | Unifix blocks, ten frames, dice, hoops, teeny tiny tens frame. | | |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES | |
| Explicitly communicate lesson outcomes and work quality. Place 11 Unifix blocks in the centre of the circle. While students close their eyes, place a container over three blocks. Invite students to count the blocks that are not covered.  Ask: How many blocks have I covered? Have students suggest ways of finding the solution; for example, counting on from 8 to 11. Encourage students to use the correct language e.g. ‘added’  Organise students into pairs and provide them with a container. Have pairs repeat the activity using 12 blocks.  Show students two ten frames. Place six blue counters in a row on one, and four red counters in a row on the second. Write 6 add 4’ on the board. Have students calculate the total.  Take a blue counter from the six and place it with the four to complete a row of five. Ask students to describe what happened. Record ‘5 add 5’ on the board. Have students calculate the total.    **Investigating Zero**  Throughout these maths problems and games, continue to ask students what happens if you do not add or take away any counters or numbers. Students should understand that adding or subtracting zero to/from a number does not change the number’. | LEARNING SEQUENCERemediationES1 | **Counting-on Cards**  **Part A**  The teacher prepares a set of number cards (a selection of numbers ranging from 20 to 50) and a set of dot cards (1 to 10). Each set is shuffled and placed face down in separate piles. In small groups, one student turns over the top card in each pile eg Students add the numbers represented on the cards together, and state the answer. The first student to give the correct answer turns over the next two cards. *Variation:* Students are asked to subtract the number on the dot card from the number on the number card.  **Part B**  Students discuss the strategies used in Part A. The teacher models recording strategies on an empty number line eg    Students are given the cards from Part A and are asked to turn over the top card in each pile and record their strategies using their own empty number line. Students share their strategies. |
| LEARNING SEQUENCES1 | Sitting in a circle, students place two hoops in the centre. Roll two-six sided dice and have students calculate the total. As doubles come up, place the dice showing the doubles inside a hoop. Use another set of dice and continue until there are three sets of dice in one hoop showing doubles, and two sets of dice in the other hoop not showing doubles. Ask students to suggest labels for each group of dice.  Put two ten frames in the centre of a circle. Place ten blocks on one and eight blocks on the other. Have students find the total number of blocks. Now take one block from the tens block and place it with the eight blocks.  Ask: Will our total number of blocks still be the same? Why?  https://kpoindexter.files.wordpress.com/2012/10/screen-shot-2012-10-02-at-8-31-07-pm.png  **Two Bags of Popsticks**  Students are given two paper bags, each containing more than ten popsticks. Students count the number of popsticks in each bag and record the amount on the bag. Some students may choose to bundle 10 popsticks together using an elastic band. Students are asked to determine the total number of popsticks  in both bags. They record, share and discuss the strategies they used to calculate the total. A variety of strategies is possible.  *Variation:* The activity could be repeated, varying the number of popsticks to suit student performance on the task. Different materials, such as interlocking cubes, could be used.  Possible questions include:  ❚ how can you make 37 with popsticks?  ❚ what other strategy could be used to combine the two numbers?  **Add or Take-away**  The teacher removes the picture cards (Kings, Queens, Jacks) from a standard pack of playing cards. The Ace is used to represent one. In small groups, each student is dealt four cards. The top card of the pack is then turned over to become the ‘target card’. Students attempt to make an addition or subtraction number sentence, using any of their four cards, so that the answer equals the number shown on the ‘target card’. Students who can do this collect a counter. The cards are returned to the pack, shuffled and the activity is repeated. Play continues until one student has collected ten counters.  **Teddy Bear Take-away**  In pairs, students each count out 20 teddy bear counters and line them up in two rows of 10. In turn, students roll a die and take away the corresponding number of bears from their collection. Students should be encouraged to remove all counters from one line before taking them from the other.  Students use their methods such as drawings, words, numerals and mathematical symbols to record the process.  **Adding Counters**  Students are given five counters and a work mat marked with two large circles.  Students are asked to place some of the counters in one circle and some in the other.  Possible questions include:  ❚ how many counters did you put into each circle?  ❚ how many counters are there altogether?  As students give their answers, the teacher models recording this as a number sentence. Students are asked to make as many different combinations to 5 as they can. The activity is repeated using a different number of counters eg 10, 20. Students practise recording number sentences  **Toss and Add - See sample units of work page 43**  Students toss three standard dice and race to see who can state the total number of dots first.  Students are asked to share and explain their strategies. eg For this example, student strategies could include:  ❚ counting all of the dots  ❚ starting with the highest number and counting on the other dice one-by-one ie 4, 5, 6, 7  ❚ starting with the known sum of two dice and counting on the third eg ‘4+1=5 and 2 more.’  ❚ using visual imagery eg ‘I took the one dot and pretended it jumped onto the ‘four’ dice to make 5 dots, and then I added 2 more.’    Possible questions include:  ❚ can you find a quicker way to add?  ❚ can you add five more?  ❚ how many do you have altogether?  Assessment  Provide students with a ten frame and counters  Ask:   * If I have 4 counters how many more do I need to make 10? (6) * Can you write a number sentence for this problem? (4+6=10) * Can you read your number sentence aloud?   Repeat using varying numbers of counters and then repeat with subtraction. |
| LEARNING SEQUENCEExtensionEarly S2 | **Teeny Tiny Ten-Frames**  Provide the students with a set of *Teeny tiny ten-frames*. Nominate a two digit number and ask the students to represent the number using the ten-frames. Have the students share how they made the number. Ask the students to make a second two-digit number. Repeat the questioning.  Have the students find the total of the two numbers using the ten-frames.  Discuss how they solved the addition.  **Variation**  Make the first number and then cover it up. Make the second number and  use the material to determine the total of both numbers.  **DENS 2** pg 90-91 |
| **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.