**MATHEMATICS STAGE 1**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 10 | STRAND:Number and Patterns | **SUB-STRAND:**  **Pattern and Algebra 2** | **WORKING MATHEMATICALLY:**  MA1-1WM, MA1-2WM, MA1-3WM |
| OUTCOMES: MA1-8NA | | **Creates, represents and continues a variety of patterns with number objects** | | |
| **CONTENT:** | | **Solve problems by using number sentences for addition and subtraction (ACMNA036)**   * Complete number sentences involving one operation of addition or subtraction by calculating the missing number. * Describe how a missing number in a number sentence was calculated. (Communication and Reasoning) | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | Questioning: What strategies can we use to find the missing numbers in maths problems? | | |
| WARM UP / DRILL | | Students count by 2s, 3s and 5s to 100. Students count forwards and then backwards. | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | | TENS Activity- Unifix Cubes | | |
| 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 | | Counters, whiteboards, whiteboard markers, playing cards, unifix cubes, bowls, ten frames | | |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES | |
| Students are allocated a one –digit or two-digit number , and set of objects (eg counters). Students are asked to show their number in as many different ways possible using the counters. Students record their answers on a whiteboard. For example the number 10 can be shown:  http://www.schools.nsw.edu.au/learning/7-12assessments/naplan/teachstrategies/yr2012/images/nn_paal_01_01.jpg  Students share their results and discuss the patterns that have been made.  Students build staircase patterns using counters. They draw, count and describe the number of squares used in the pattern. Ask questions about the patterns made:  How many squares make up the first shape? The second shape? The fifth shape?  How many squares were added to the first shape to make the second shape? The second shape to make the third?  http://www.schools.nsw.edu.au/learning/7-12assessments/naplan/teachstrategies/yr2012/images/nn_paal_01_02.jpg | LEARNING SEQUENCERemediationES1 | Students are given 20 counters to begin with.   * Using these counters students are asked to make 1 row of 1, then 2 rows of 1, etc.   Students discuss what they see happening each time they make a new row.  Are students able to continue the pattern by themselves?   * Start again with 1 row of 5, 2 rows of 5, etc. |
| LEARNING SEQUENCES1 | * **Investigate:** Students build interesting patterns to describe to their partner using counters. Students tell their partner how many counters they used in each step of the pattern and how many counters were added each time to complete the pattern.   http://www.schools.nsw.edu.au/learning/7-12assessments/naplan/teachstrategies/yr2012/images/nn_paal_01_03.jpg |
| LEARNING SEQUENCEExtensionEarly S2 | * Students are given 100 counters and asked to build patterns showing different counting patterns. Students record their patterns created and share with another student who needs to interpret their pattern and continue their pattern. Students discuss how they came up with their responses and see if they were correct. |
| **EVALUATION & REFLECTION** | Were students able to independently see the patterns created and continue them? Anecdotal records |

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES | |
| Draw five cube connected on the board, as shown below.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  |  |  |  |  |   0+5=5  Draw these cubes again this time colouring in one cube and leaving other blank. Show the number sentence that matches it.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  |  |  |  |  |   1+4=5  Continue this process by colouring in one more cube each time until all ways of adding numbers to five have been addressed.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  |  |  |  |  |   2+3=5   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  |  |  |  |  |   3+2=5   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  |  |  |  |  |   4+1=5  Discuss what patterns students can see when all the pictures and number sentences have been drawn/written. Repeat process with other numbers. | LEARNING SEQUENCERemediationES1 | * Activity- Teacher places 5 blocks on top of upside down container. Partner closes eyes and child takes some off and puts them underneath. Partner guesses how many are underneath. Lift container and check.   Begin with 5 blocks. Use 5 frames for support.  Can increase to10 blocks.  Students record responses on the group whiteboard.  Game: [www.bbc.co.uk/schools/laac/numberschl.shtml](http://www.bbc.co.uk/schools/laac/numberschl.shtml) |
| LEARNING SEQUENCES1 | * Activity- Teacher places 10 blocks on top of upside down container. Partner closes eyes and child takes some off and puts them underneath. Partner guesses how many are underneath.   Lift container and check. Begin with 10 blocks.  Use a ten frame instead. Students visualise how many more to make 10.  Students record information on a whiteboard.  Game: Funky Mummy 2 [www.ictgames.com/funkymum20.html](http://www.ictgames.com/funkymum20.html)  [www.primaryresources.co.uk/online/missing.swf](http://www.primaryresources.co.uk/online/missing.swf) |
| LEARNING SEQUENCEExtensionEarly S2 | * Game- Use pairs of cards that equal a set number. Say the game is called ‘40’. Each pair of cards equal 40 (Have a design on the back that matches each pair). Put 2 matched designed cards face down. Flip one number over and do any strategy it takes to get to 40. Then flip the other card over to check your work. If correct, you keep the pair. The one with the most pairs, wins.   Students record their card responses. |
| **EVALUATION & REFLECTION** | Write the number 7 on the board and ask students to think of all the combinations that add together to make the number. Discuss the patterns to confirm students understanding.  Where students able to see the pattern within number sentences adding to the same amount?  Did students use their knowledge of patterns to work out more difficult questions? |