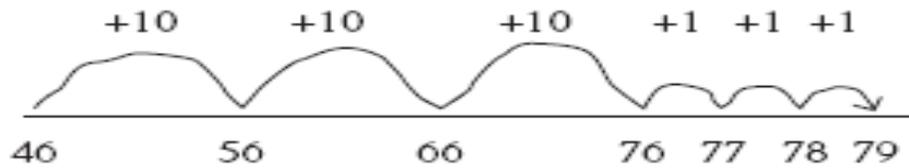


Booragul Public School NSW Syllabus for the Australian Curriculum – Number and Algebra

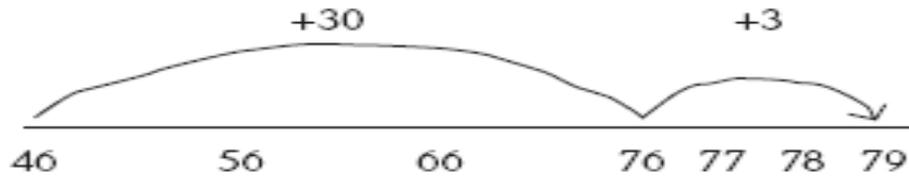
Addition and Subtraction - 1

Outcome	Teaching and Learning Activities	Notes/ Future Directions/Evaluation	Language / Date:
<p>A student:</p> <ul style="list-style-type: none"> › describes mathematical situations and methods using everyday and some mathematical language, actions, materials, diagrams and symbols MA1-1WM › uses objects, diagrams and technology to explore mathematical problems MA1-2WM › supports conclusions by explaining or demonstrating how answers were obtained MA1-3WM › applies place value, informally, to count, order, read and represent two- and three-digit numbers MA1-4NA <p>Syllabus reference: Hard copy page: 67 - 68 Digital: 72-73</p>	<p>Background Information</p> <p>By developing a variety of counting strategies and ways to combine quantities, students recognise that there are more efficient ways to count collections than counting by ones.</p>	<ul style="list-style-type: none"> • counting on, • counting back, • combine, • plus, • add, • take away, • minus, • the difference between, • total, • more than, • less than, • double, • equals, is equal to, • is the same as, number sentence, strategy. 	

<p>Explicit Mathematical Teaching</p> <p>It is appropriate for students at this Stage to use concrete materials to model and solve problems, for exploration and for concept building. Concrete materials may also help in explanations of how solutions were arrived at. Addition and Subtraction should move from counting and combining perceptual objects, to using numbers as replacements for completed counts with mental strategies, to recordings that support mental strategies (such as jump or split, partitioning or compensation).</p> <p>At this Stage, students develop a range of strategies to aid quick recall of number facts and to solve addition and subtraction problems. Students should be encouraged to explain their strategies and invent ways of recording their actions. It is also important to discuss the merits of various strategies in terms of practicality and efficiency.</p> <p>In performing a subtraction, students could use 'counting on or back' from one number to find the difference. The 'counting on or back' type of subtraction is more difficult for students to grasp. Nevertheless, it is important to encourage students to use the 'counting on' strategy as a method of solving comparison problems after they are confident with the 'take away' type.</p> <p>Jump strategy on a number line:</p> <p>An addition or subtraction strategy in which the student places the first number on an empty number line and then counts forward or backwards firstly by tens and then by ones to perform a calculation. (The number of jumps will reduce with increased understanding.)</p> <p>eg 46 + 33</p> <p>Method 1:</p>	



Method 2:



Ignition activities:

Ignition Activities

Greedy Pig

1. To play this game you need an ordinary 6-sided die.
2. Each turn of the game consists of one or more rolls of the die. You keep rolling until you decide to stop, or until you roll a 1. You may choose to stop at any time.
3. If you roll a 1, your score for that turn is 0.
4. If you choose to stop rolling before you roll a 1, your score is the sum of all the numbers you rolled on that turn.
5. Each player has 10 turns.
6. The player with the highest score wins.

There are many variations of this game, the most common being a full class version in which the teacher rolls the die, and calls out the numbers. All students play using the same numbers and their score depends on when they elect to 'save' their score. If they save their score any further rolls that turn do not count towards their score. If a 1 is rolled all players who have not saved their score get 0 for that turn and the next turn starts. The ones dice can be changed to adding ten sort hundreds by writing on

<p>blank dice. 1 could be changed to any other number as the key number to avoid rolling</p>		
<p>Adding Counters – See sample units of work page 43 - 45 Students are given five counters and a work mat marked with two large circles.</p> <p>Students are asked to place some of the counters in one circle and some in the other. Possible questions include:</p> <ul style="list-style-type: none"> ■ how many counters did you put into each circle? ■ how many counters are there altogether? <p>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</p>		
<p>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:</p> <ul style="list-style-type: none"> ■ 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.' <p>Possible questions include:</p> <ul style="list-style-type: none"> ■ can you find a quicker way to add? ■ can you add five more? ■ how many do you have altogether? 		

<ul style="list-style-type: none"> ■ how did you get your answer? <p><i>Variation:</i> Students could repeat the activity using numbered dice or dice with larger numbers.</p>		
<p>Blocks on the Bowl - See sample units of work page 43</p> <p>In pairs, students are given a collection of cubes (up to 10) and a bowl. The bowl is turned upside down on the desk. Student A places the blocks on top of the bowl and Student B counts the blocks.</p> <p>While Student B looks away, Student A removes some of the blocks and places them under the bowl. Student A asks Student B 'How many blocks are under the bowl?'</p> <p>Student B records their answer. They check the actual number of blocks altogether.</p> <p>Students swap roles and repeat the activity using a different number of blocks.</p> <p><i>Extension:</i> When the students are confident with combinations up to 10, the activity could be extended to include numbers greater than 10.</p> <p>Possible questions include:</p> <ul style="list-style-type: none"> ■ how many are left? ■ what does ten take away five equal? ■ I am thinking of a question where the answer is 5. What could the question be? ■ how many altogether? ■ six plus what equals nine? (Adapted from CMIT) 		
<p>Make Your Calculator Count - from sample units of work page 43 - 45</p> <p>Students are shown how to use the process of repeatedly adding the same number on a calculator to count</p> <p>eg</p> <p>In pairs, students use the calculator to count from one by repeatedly pressing the '=' button and record the counting numbers on a paper strip.</p> <p>This process can be repeated by constantly adding other Numbers</p>		

Counting-on Cards - from sample units of work page 43 - 45

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.

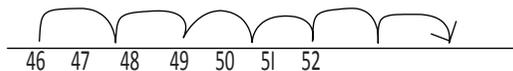
In small groups, one student turns over the top card in each pile eg

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.

Doubles Bingo - from sample units of work page 43 - 45

Students are given a blank 2 × 3 grid and six counters.

Students are asked to record a number in each square that is 'double any number' on a standard die

Eg

12	2	8
6	2	6

The teacher rolls the die and states the number shown.

Students 'double the number' on the die and place a counter on the corresponding answer on their grid.

<p>The teacher continues to roll the die until one student has covered all numbers on their grid.</p> <p><i>Variation:</i> Students are asked to record numbers in each square that are 'double plus one' or 'double take away one'. A die marked with numbers other than 1 to 6 could be used.</p>		
<p>Teddy Bear Take-away - from sample units of work page 43 - 45</p> <p>In pairs, students each count out 20 teddy bear counters and line them up in two rows of 10.</p> <p>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.</p> <p>Students use their own methods to record the process.</p>		
<p>Make 100 - from sample units of work page 43 - 45</p> <p>The teacher removes the picture cards (Kings, Queens, Jacks) from a standard pack of playing cards. The Ace is used to represent one.</p> <p>In small groups, each student is dealt six cards.</p> <p>The aim of the activity is to add all six card numbers together to make the closest total to 100 (but no greater than 100).</p> <p>Each student can nominate one of their cards to be a 'tens' card.</p> <p>For example, if the student was dealt they could nominate the 7 card to have the value 70 and add the remaining cards for a total of 93.</p> <p>Students could use a calculator to assist. They should be encouraged to record their calculations.</p>		
<p>Add or Take away - from sample units of work page 43 - 45</p> <p>The teacher removes the picture cards (Kings, Queens, Jacks) from a standard pack of playing cards. The Ace is used to represent one.</p> <p>In small groups, each student is dealt four cards. The top card of the pack is then turned over to become the 'target card'.</p> <p>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</p>		

<p>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.</p>		
<p>Take away popsticks - from sample units of work page 43 - 45 In pairs, each student counts a particular number of popsticks up to 100, into a paper bag, in bundles of tens and ones. In turn, students roll two standard dice and add together the two numbers obtained. They take that number of popsticks out of the bag and count how many are left. Students record the activity using an empty number line eg -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 36 37 38 39 40 41 42 43 44 45 46 <i>Variation:</i> Students could throw the dice and use the numbers obtained to represent a two-digit number (eg a 3 and a 2 could be 32 or 23) to be add</p>		
<p>Two Bags of Popsticks - from sample units of work page 43 - 45 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. <i>Variation:</i> 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? Students compare recording methods with a partner and determine the quickest strategy.</p>		