










<b>Addition &amp; Subtraction</b>					
<p><b>Outcomes</b></p> <p>Early Stage 1</p> <ul style="list-style-type: none"> <li>› describes mathematical situations using everyday language, actions, materials and informal recordings MAe-1WM Communicating</li> <li>› uses objects, actions, technology and/or trial and error to explore mathematical problems MAe-2WM Problem-Solving</li> <li>› uses concrete materials and/or pictorial representations to support conclusions MAe-3WM Reasoning</li> <li>› combines, separates and compares collections of objects, describes using everyday language, and records using informal methods MAe-5NA (p48/49)</li> </ul>					<p><b>Language</b></p> <p>count forwards, combines with, joins, count backwards, take away, how many more, all together, makes.</p>
<p><b>NUMERACY CONTINUUM</b></p> <p>Early arithmetical strategies (EAS) <i>EAS refers to the range of counting strategies that are used to solve addition and subtraction problems.</i></p>	<p><b>Emergent counting</b></p> <ul style="list-style-type: none"> <li>• Cannot count visible items.</li> <li>• Does not know the number words or cannot coordinate the number words to count items.</li> </ul>	<p><b>Perceptual counting</b></p> <ul style="list-style-type: none"> <li>• Counting visible items to find the total count.</li> <li>• Builds and subtracts numbers by using materials or fingers to represent each number.</li> <li>• Objects or fingers remain constantly in view while counting.</li> </ul>	<p><b>Figurative counting*</b></p> <ul style="list-style-type: none"> <li>• Visualises concealed items and determines the total by counting from one.</li> <li>• May use fingers to represent the concealed items when the total of the two screened parts is greater than ten.</li> </ul>	<p><b>Counting-on-and-back*</b></p> <ul style="list-style-type: none"> <li>• Counts on or back to solve problems.</li> <li>• A number takes the place of a completed count.</li> <li>• Counts on rather than counting from one to solve addition or missing addends tasks.</li> <li>• Uses a count-down-from strategy, eg. 17-3 as 16, 15, 14, answer 14, or count-down-to-strategy, eg. 17-14 as 16, 15, 14, answer 3, to solve subtraction tasks.</li> </ul>	<p><b>Facile (flexible)*</b></p> <ul style="list-style-type: none"> <li>• Uses known facts, number structure and other non-count-by-one strategies to solve problems (involving one or two digits).</li> </ul>

<p><b>SYLLABUS: pp48-49</b>          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, split, partitioning and compensation).          Subtraction typically covers two different situations: 'taking away' from a group, and 'comparing' two groups (ie finding 'how many more').</p>					
<p>Students should be confident with taking away from a group before being introduced to comparing two groups. They should be able to compare groups of objects by using one-to-one correspondence before being asked to find out how many more or how many less there are in a group.          In Early Stage 1, addition and subtraction problems should be related to real-life experiences that involve the manipulation of objects. Modelling, drawing and writing mathematical problems should be encouraged in Early Stage 1. However, formal writing of number sentences, including the use of the symbols +, - and =, is introduced in Stage 1.  <b>Addition and subtraction should be taught in conjunction with each other as the foundation for conceptual understanding of their inverse relationship.</b></p>	<p><b>TEN - ELP</b>          Syllabus: NES1.2          Sample units of work pp. 16-19          Developing Efficient Numeracy Strategies Stage 1 (DENS 1): pp. 17-72          Posting blocks, (DENS 1), 32-33          Take a numeral, (DENS 1), pp. 32-33 BLM pp. 57          Mothers and babies, (DENS 1), p. 34 BLM pp. 62-63          Beehive, (DENS 1), p. 34 BLM pp. 64-65          Learning object - Penguin count</p>	<p><b>TEN - ELP</b>          Syllabus, NES1.2, NS1.2          Sample units of work, pp. 16-19, pp. 42-46          Developing Efficient Numeracy Strategies Stage 1 (DENS 1), pp. 113-121          Rabbits ears, (DENS 1), pp. 104-107          Ten frames, (DENS 1), pp. 112-113 BLM pp. 55          Blocks on a bowl, (DENS 1), pp. 158-159          Learning object - Egg carton          Learning object - Penguin count          Learning object - Penguin pins          SMART notebook - Blocks on a bowl          SMART notebook - Tens frames</p>	<p><b>TEN - ELP</b>          Syllabus, NS1.2          Sample units of work, pp. 42-46          Developing Efficient Numeracy Strategies Stage 1 (DENS 1), pp. 161-187          Add two dice, (DENS 1), pp. 162-165          Posting counters, (DENS 1), pp. 170-171          Friends of ten, (DENS 1), pp. 174-175          Subtraction teddies, (DENS 1), pp. 186-187 BLM pp. 214          Learning object - Penguin count          Learning object - Penguin pins          SMART notebook - Add two dice          SMART notebook - How many eggs</p>	<p><b>TEN - ELP</b>          Syllabus, NS1.2          Sample units of work, pp. 42-46          Developing Efficient Numeracy Strategies Stage 1 (DENS 1), pp. 232-267          Race to the Pool, (DENS 1), pp. 250-251          Doubles bingo, (DENS 1), pp. 262-263          Orange tree, (DENS 1), pp. 266-267 BLM pp. 286-287          Learning object - Penguin count          Learning object - Penguin pins          SMART notebook - Add two dice</p>	<p><b>TEN - ELP</b>          Syllabus, NS1.2, NS2.2          Sample units of work, pp. 42-46, pp. 87-90          Developing Efficient Numeracy Strategies Stage 2 (DENS 2), pp. 20-39          Spin double and flip, (DENS 2), pp. 24-25          Addition star, (DENS 2), pp. 26-27 BLM p.137          Singles or doubles, (DENS 2), pp. 32-33          Hands up, (DENS 2), pp. 66-67          Learning object - Addition wheel          Learning object - Penguin pins          Learning object - Number spinners          SMART notebook - Addition wheel          Web link - Virtual dice</p>

<b>DICE</b>	<ul style="list-style-type: none"> <li>*Roll 10 sided die – write the number before and after.</li> <li>*Two dot dice addition.</li> <li>*Match dice to numeral card.</li> </ul>	<ul style="list-style-type: none"> <li>* Two dot dice addition, one dot, one numeral.</li> <li>*Before and after 20 sided dice.</li> </ul>	<ul style="list-style-type: none"> <li>*Two dice addition: two number dice – 10 or 20 sided and smaller dice.</li> <li>*Roll place value tens and ones.</li> </ul>	<ul style="list-style-type: none"> <li>*Three dice addition, looking for doubles, and friends of ten.</li> <li>*Place value dice: Making 100s, 10s, ones. Make a 3-digit number – what’s 10 more?</li> </ul>	<ul style="list-style-type: none"> <li>*Four/five dice addition or looking for combinations.</li> <li>*Roll two 20 sided dice and add.</li> <li>*Engineers dice.</li> <li>*Fancy dice.</li> </ul>
<b>DOMINOES</b>	<ul style="list-style-type: none"> <li>*Match dominoes to numeral cards.</li> <li>*Matching 5 to 5.</li> </ul>	<ul style="list-style-type: none"> <li>*Show <math>\frac{1}{2}</math> of domino and give the total. Students work out the missing number.</li> <li>*Before or after.</li> <li>*Follow the leader.</li> </ul>	<ul style="list-style-type: none"> <li>*Two domino addition looking for friends of ten, doubles, etc.</li> <li>*Parking lot.</li> </ul>	<ul style="list-style-type: none"> <li>*Domino addition using dominoes as 2-digit numbers.</li> <li>*Make 2-digit number – what’s 10 more / 10 less?</li> </ul>	<ul style="list-style-type: none"> <li>*Domino addition using dominoes as 4-digit numbers.</li> <li>*Make 4-digit number – what’s 10 more / 10 less?</li> </ul>
<b>CARDS</b>	<ul style="list-style-type: none"> <li>*Snap.</li> <li>*Go fish.</li> <li>*Ordering 1-9.</li> <li>*What comes next? Turn a card and write the next numeral.</li> <li>*Match cards 1-6 to dice patterns.</li> </ul>	<ul style="list-style-type: none"> <li>*Snap and Go Fish – friends of ten.</li> <li>*Turn over two cards to make ten concentration.</li> <li>*Turn over two cards to make a 2-digit number. Number before / after?</li> </ul>	<ul style="list-style-type: none"> <li>*Make 15. Before and after.</li> <li>* Turn over three cards. What’s the biggest/smallest number you can make?</li> </ul>	<ul style="list-style-type: none"> <li>*2-digit addition – turn over 4 cards to make 2-digit numbers. Add or subtract using the split/jump strategy.</li> <li>*Before/after 3 digit.</li> </ul>	<ul style="list-style-type: none"> <li>*3- or 4-digit addition – turn over 4 cards to make 2-digit numbers. Add or subtract using the split/jump strategy.</li> </ul>
<b>Teaching and Learning Activities</b>			<b>Notes/ Future Directions/Evaluation</b>		<b>Date/ LAC Icon</b>

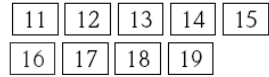
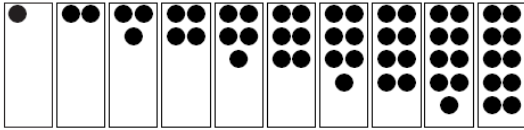
<p><b>Explicit Teaching</b>  Students will need to use hands-on materials to represent practical situations to model addition and subtraction.  Teachers will need to use the language and model how to solve simple addition and subtraction, “How many more?”</p> <p><b>Mandatory Activity</b> – Students investigate different methods of adding and subtracting used in various cultures, eg Aboriginal and Torres Strait Islander methods involving spatial patterns and reasoning, Asian counting tools such as the abacus. This activity should be repeated many times in a variety of ways throughout the year. Teachers will need to make links and allow students to explore cultures that may be personally relevant. Students record addition and subtraction informally using drawings, words and numerals.  The activities below each have explicit instructions and are scaffolded for increasing complexity. It is not expected that every activity be completed as some activities may not be suitable for groups of students ie students grouped into EARS groups and each group has a different activity.</p>		 <p>Literacy  Critical and creative thinking  Asia and Australia's engagement with Asia  Aboriginal and Torres Strait Islander histories and cultures</p>
<p><b>EMERGENT Activities</b></p>		
<p><b>Dinosaur Derby Counting</b>  The teacher gives a Dinosaur Derby game board to each pair of children. Student A rolls a dice, moving their marker the corresponding number of places on the board. Student B does the same. Students must roll the exact number of places remaining to move to Home or they miss their turn. Students record addition and subtraction informally using drawings, words and numerals.</p> <p>Students need to experience a range of real-life situations such as daily counting of the class members, how many in the line, etc so that they can develop the skills to count and match 1-1. This will need to be established quickly and securely to ensure students can access the games and activities to build their early numeracy/ mathematics processing system.</p>		

<b>PERCEPTUAL Activities</b>		
<p><b>Addition and Subtraction with Blocks</b></p> <p>One student stands out the front holding ten fingers in the air. Roll a die and place the corresponding number of blocks on the fingers of the student. As the addition process takes place model counting forward to get the total. Encourage students to keep the first number in their head when adding the second number thrown on the dice.</p> <p>Complete the same activity but with a student starting with ten blocks and doing subtraction. Model the process of taking from the group. Students record addition and subtraction informally using drawings, words and numerals.</p>		<p> Critical and creative thinking</p>
<p><b>Apple Turnovers</b></p> <p>Construct four sets of cards with dot patterns for the numerals 1 to 6. Cards could be made in the shape of apples. Give fifty counters to each pair of students. Shuffle the cards and place them face down on the table. Both players take a card from the pile of cards. The players determine the difference between the two numbers on the apple cards. The player with the larger number takes the difference in counters from his or her partner's pile of counters. Continue until all cards have been turned over. The player with the most counters is the winner. Students record addition and subtraction informally using drawings, words and numerals. Students record addition and subtraction informally using drawings, words and numerals.</p>		<p> Critical and creative thinking</p>
<p><b>Diffy Towers</b></p> <p>Provide each pair of students with a die and a supply of Unifix blocks. Taking turns, students roll the die and make a tower with Unifix blocks. The towers are compared to determine the difference. The student with the larger number keeps the difference. The first to accumulate 10 blocks is the winner.</p> <p>Students describe a problem that they can do in their heads. Students draw a picture and describe how they worked out their problem. Students record addition and subtraction informally using drawings, words and numerals.</p>		<p> Literacy  Critical and creative thinking</p>


<p><b>Domino Count</b></p> <p>Students are given a set of dominoes and are asked to count how many dots are on each side of a domino and then how many dots there are altogether. Students are encouraged to:</p> <ul style="list-style-type: none"> <li>• Work out how many dots there are on each side without counting one at a time</li> <li>• Discuss different strategies they could use to work out how many there are altogether.</li> </ul> <p>The teacher could ask the students to imagine a domino with four dots on one side and one dot on the other. They then discuss with students how many dots there are and strategies that can be used to find out.</p> <p>The teacher could also pose the problem: ‘There are six dots altogether on my domino. How many dots could there be on each side?’</p> <p>Students record and discuss the possible answers. Some students may require materials such as counters to assist them in solving the problem.</p> <p>Possible questions include:</p> <ul style="list-style-type: none"> <li>• is there a quicker way to find the answer than counting by ones from one?</li> <li>• is there a quicker or easier way to add?</li> <li>• is that the only possible answer?</li> </ul> <p>Students record addition and subtraction informally using drawings, words and numerals.</p>		 <p>Literacy</p>  <p>Critical and creative thinking</p>
<p><b>Taking-away Blocks</b></p> <p>Students count out 10 objects. Teacher rolls a die and students take away that number of objects. They determine how many objects are left and informally record what has been done. The game is repeated for a predetermined number of throws. Continually discuss the strategies being used to subtract, asking students to share how they are working out the answers. Model more efficient strategies such as counting back for those students who are at that level of understanding.</p> <p>Students record addition and subtraction informally using drawings, words and numerals.</p>		 <p>Literacy</p>  <p>Critical and creative thinking</p>

**Teen Numbers Plus**

The teacher prepares a set of dot cards for the numbers 1 to 10 and a set of number cards from 11 to 19, as shown. All dot cards are turned face down, but kept in sequence. In small groups, a student turns over two of the dot cards and states how many dots there are altogether. If the answer is one of the teen number cards, the student removes the number card and the dot cards are turned face down again. Play continues in turn until all of the teen number cards have been collected.




Students record addition and subtraction informally using drawings, words and numerals.






 Literacy

**Windows**





Construct cardboard window frames covered with cellophane paper. Show a numeral card and ask the students to make a row using that number of teddy bears. Ask the students to place their window frame after a nominated group of teddies. For example, with ten teddies, ask the students to show three teddies outside the window. (Students place the frame after the third teddy.) Instruct the students to look through the window and state how many teddies are inside the window. Students record addition and subtraction informally using drawings, words and numerals.




 Literacy



**FIGURATIVE Activities**





<p><b>Addition Posting Box</b></p> <p>Students silently count while the teacher drops a collection of blocks into a box one at a time. Students record the total number of blocks, compare and discuss their totals with others. The teacher adds more blocks slowly (2 or 3). The students count silently and record the new total.</p> <p>Possible questions include:  How did you find the total number of blocks?  What number comes next?  Did someone else use a different way?</p> <p>Students should be encouraged to hold the starting number in their head and count forwards from that number to determine the total. Students record addition and subtraction informally using drawings, words and numerals.</p>		 Literacy
<p><b>Blocks on a Bowl</b></p> <p>Two students will need a number of blocks, e.g. 10 and a container. Students take turns to hide a number of blocks under the container. The partner looks at how many blocks are left on top of the container to work out how many are missing.</p> <p>Students record addition and subtraction informally using drawings, words and numerals.</p>		 Literacy  Critical and creative thinking
<p><b>Bucket count on</b></p> <p>Drop a small collection of blocks one by one, into a bucket. Ask students to count aloud as each block is added to the container. After dropping the blocks, show the students the contents of the bucket. Then hold the bucket above the eye level of the students. Ask the students to state how many blocks would be in the bucket if one more block was added. Repeat the question, changing the number of blocks to be added to two and three blocks. Encourage the students to count on from the number of blocks already in the bucket to find the total.</p> <p><i>Variation</i></p> <ul style="list-style-type: none"> <li>• Ask the students to pretend there are a nominated number of blocks in the bucket. Drop additional blocks into the bucket. Students count on to find the total sum of the blocks in the bucket.</li> <li>• Repeat the activity for subtraction</li> </ul> <p>Students record addition and subtraction informally using drawings, words and numerals.</p>		 Literacy  Critical and creative thinking



<p><b>Combinations to Ten</b>  Students are given a container of 10 counters that are all one colour on one side and a different colour on the reverse.  In pairs, students shake the container and roll the counters onto the floor. Students sort the counters into colour groups, depending on which side the counters land.  Students should be encouraged to organise the groups so they can see ‘how many’ at a quick glance eg Students determine how many counters are, for example, red and how many are yellow. Students use drawings and numerals to record their results.</p>		 Literacy
<p><b>Combinations of Ten #2</b>  Provide pairs of students with a number of counters/objects, e.g. 10 and two plates. Students work out and record the number of different ways they can each have some counters. Discuss how many more each student has. Students record addition and subtraction informally using drawings, words and numerals.</p>		 Critical and creative thinking
<p><b>Dot Pattern Cards</b>  Construct dot patterns for numbers one to nine, with two copies of card 5. Place the cards face down on a table between pairs of students. The students take turns to turn over two cards and add the two cards together.  If the total is “ten” the student keeps the two cards. If the cards do not equal “ten” they are returned to the table. Encourage students to count on from the larger number. Students record addition and subtraction informally using drawings, words and numerals.</p>		 Critical and creative thinking
<p><b>Doubles</b>  Instruct the students to use two hands to demonstrate double numbers from 1 to 5. For example, “Show me double four. How many altogether?”  In this example the students would raise four fingers on each hand and call out the answer. Students may bring their hands down to count and confirm the total. Students record addition and subtraction informally using drawings, words and numerals.</p>		 Literacy


<p><b>Doubles plus one</b></p> <p>This activity is played in a similar way to <i>Doubles</i>. Instruct the students to raise their fingers for a nominated double combination and then add one more finger to find the total. Alternatively, play <i>Doubles minus one</i>.</p> <p>For this activity students raise their fingers to represent a nominated double and then subtract one finger to find the total.</p> <p>Students record addition and subtraction informally using drawings, words and numerals.</p>		 Literacy
<p><b>Fishing Addition</b></p> <p>Construct six sets of four cards, with each card in any one set displaying a basic addition fact for the same number in the range one to ten. Each set of cards should have a unique sum. Shuffle the cards and deal five cards to each player. Place the remainder of the cards face down on the floor. Instruct the students to look at their dealt cards and take turns to discard any pairs of cards that add up to the same total. After discarding any pairs of cards, the first player asks his or her partner for a card which equals a specific number. For example: "Pass me an eight". If the partner holds a card totalling the nominated number, it must be handed over. If the partner does not have the nominated card, the person who asked takes a card from the central pile. In both cases, if a pair of cards is formed, the student discards them. The winner is the player who discards all of his or her cards first.</p> <p>Students record addition and subtraction informally using drawings, words and numerals.</p>		 Literacy  Critical and creative thinking

<p><b>Hidden Counters</b>  Students are given a small number of counters to count. The teacher picks up the counters with one hand, puts both hands behind their back, distributes the counters between their two hands and closes their fists. Students are then shown the two closed fists. One hand is opened and the students see the number of counters in that hand. Students determine how many counters the teacher has in the other hand and explain how they worked it out. The activity is repeated many times and the number of counters is varied.  <i>Variation:</i> Students play this as a game with a partner.</p> <p><b>How Many Eggs?</b>  Construct a grid using BLM on page 209 as well as one set of rule cards and a set of numeral cards for each group of students. Rule cards need to display either an addition or subtraction sign, followed by the numeral 1, 2 or 3. For example, a rule card might display: “ + 3”.  Instruct the students to place the correct number of counters on each column according to the numeral written at the top of the column.  Students then take turns to turn over a rule card from the pile. Students follow the rule, to add or subtract counters from each column and determine the new total. As the students determine each total, they place a corresponding numeral card at the bottom of each column.</p>		 Literacy Critical and creative thinking
<p><b>Ring the Bell</b>  Provide the students with a supply of counters. Ring the bell a number of times, for example, four times. Instruct the students to place the corresponding number of counters on their desk. Hold up a symbol card for addition or subtraction and then ring the bell again, for example twice.  Have the students respond by observing the symbol card and adding or subtracting the correct number of counters. Students then state the total number of counters. Encourage the students to discuss their actions and how they arrived at their answers. Students record addition and subtraction informally using drawings, words and numerals.</p>		 Literacy Critical and creative thinking

<p><b>Same But Different</b>  <u>Purpose:</u> In this game students use clothes pegs to show that different combinations can produce the same number.  <u>Aim :</u> To be the first team to produce a set of different combinations for a given number.  <u>Instructions:</u> Each team is given a set of numeral cards (one card for each player) face down. Simultaneously teams turn over their cards and, using clothes peg, race to create different number combinations to total the numeral shown on the cards. Team members compare each other's solutions to ensure that all combinations are different. If all combinations are different, the team members stand, hold up their cards and say their number aloud. The first team to produce a correct set of combinations wins. Invite the members of the winning team to show and discuss their combinations.  Students record addition and subtraction informally using drawings, words and numerals.</p>		 Literacy  Critical and creative thinking
<p><b>Sum What (Dice Game).</b>  <i>Equipment:</i> a 1 -12 number strip for each player, two 1-6 dice and counters for each group.  <i>Activity:</i> Students take turns to roll the two dice, add the numbers shown and put counters on the strip to cover a combination. Example, if 5 and 3 is rolled, the student can cover the 8 or any other combination of 8. First to complete their strip is the winner.  Students record addition and subtraction informally using drawings, words and numerals.</p>		 Critical and creative thinking
<p><b>Teddy Tummies: Addition</b>  Prepare base cards using BLM DENS 1 on page 212. Provide each pair of students with ten counters and the appropriate base board. The students take turns to distribute the counters between the two teddies by placing the counters on the teddies' tummies. Pairs of students then discuss the number combinations formed with the ten counters. The students continue the activity, investigating the possible number combinations for the ten counters. Students record addition and subtraction informally using drawings, words and numerals.</p>		 Literacy

**Ten Frames**

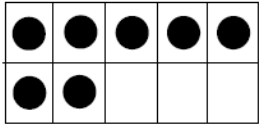
Provide each student with a blank ten frame and ten counters. Ask students to place a specified number, less than ten, on their ten frame. Direct students to add another specified number of counters to the frame and to find the total. Students record addition and subtraction informally using drawings, words and numerals.

 Literacy

**Ten Frame Subtractions**

Students are shown a ten-frame with some counters on it

eg



Possible questions include:

- how many counters are on the ten-frame?
- how many squares are full/empty?

Students are asked to imagine three counters jumping off the ten-frame .Children can draw what they think will still be there.

Possible questions include:

- how many counters are left on the ten-frame?
- how did you work that out?
- how many squares are full/empty?

The three counters are then moved off the ten-frame for students to check their answer.

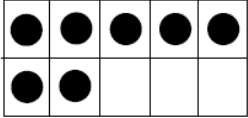
This activity encourages students to visualise numbers. It should be repeated with other counter combinations.

Students record addition and subtraction informally using drawings, words and numerals.


 Literacy  
Critical and creative thinking

**Ten Frames Bingo**


Each child has a ten frames bingo board. One child holds up a numeral card in the range 0-10 and each child looks at their board to see how many dots missing on their ten frames. If the numeral card is the same as the missing dots on one of their frames the child/children puts counters on that tens frame to make it up to ten










Eg the child would need the numeral card 3 to be held up so the child could place 3 counters on the board to make 10. The first child to fill in their 3 frames is the winner. Students record addition and subtraction informally using drawings, words and numerals.

  
Literacy**Two Dice Toss**




Provide each pair of students with two dice and a pile of counters. Have the students take turns to throw the dice and add the total, counting on from the larger number. Students then take the corresponding number of counters from a central pile. The game continues until all the counters have been removed from the central pile. Students record addition and subtraction informally using drawings, words and numerals.




  
Literacy



<h1>COUNTING ON AND BACK Activities</h1>		
<p><b>Addition lotto</b>          Prepare lotto cards displaying numerals in the range eleven to twenty. Select a student to act as a caller. This student calls out any two numbers in the range one to ten and records the total, out of view of the class. The remaining students add the two numbers that have been called and, if the total corresponds to a numeral on their lotto card, they cover the numeral with a counter. The game continues until one student covers all the numerals on the lotto card.</p> <p><b>Addition wheel</b>          Provide students with a copy of the addition wheel stencil. (See the BLM on DENS 1 page 285.) Ask the students to write a number between eleven and twenty on the centre of the wheel. The students then need to determine the number combinations which would equal the number at the centre of the wheel. Have the students record the number combinations within the “spokes” of the addition wheel, radiating out from the centre. Provide the students with calculators to verify their calculations. Students record addition and subtraction informally using drawings, words and numerals.</p>		 Literacy  Critical and creative thinking
<p><b>Balancing numbers</b>          Construct number sentence cards where the addends are selected from numbers between 11 and 20. Prepare a chart with a balance beam drawn on it, as shown in the diagram. Organise the students into pairs. Ask the students to take turns to place a number sentence card on each side of the balance so that the sum of each card is equal. Allow students to confirm their partner’s answer. Students record addition and subtraction informally using drawings, words and numerals.</p>		 Literacy



<p><b>Beanstalk</b>  This activity is best completed with a maximum of five students. Prepare Beanstalk base board using the BLM on DENS 1 page 291 and a pack of instruction cards. The instruction cards should state the direction in which the student moves along the beanstalk, either up or down, and the number of spaces to move. For example, “go up three spaces.” Commence the activity by instructing each student to place a marker at position 10 on the beanstalk. In turns students take an instruction card, follow the directions and move their marker accordingly along the beanstalk. The winner is the first person to reach the castle at the top of the beanstalk. Students record the number sentences.</p>		 Literacy  Critical and creative thinking
<p><b>Bees</b>  Construct cardboard bees using the BLM on DENS 1 page 283. Write numerals, selected from the range 11 to 20, on the middle section of each bee. On the wings, display dot patterns which, when added together, equal the numeral displayed on the body. The stencil will need to be cut so that the wings and body are in separate pieces. Place the wings and body parts down on the floor in a random arrangement. Ask the students to select one of the bee bodies and to find the correct pair of wings which, when the dot patterns are added together, will equal the numeral written on the body. Students record addition and subtraction informally using drawings, words and numerals.</p>		 Literacy
<p><b>Build a tower</b>  Organise the students into pairs. Provide each student with ten Unifix blocks as well as an additional pile of blocks, such as twenty, for each pair of students. Prepare “direction cards” showing either addition or subtraction tasks, for example: + 3. Have the students take turns to draw a “direction card” and follow the instruction by adding or subtracting the correct number of blocks to their tower. The winner is the first to make a tower of twenty blocks. Ask the students to explain their strategies for solving the problems to their partners. Students record addition and subtraction informally using drawings, words and numerals.</p>		 Literacy









<p><b>Combination trains</b>          Prepare a collection of toy trains and carriages. If toy trains are unavailable, construct trains from Lego®, milk cartons or other suitable material. Attach a numeral card to each engine and carriage. Ask the students to select two carriages and find the total by adding the numerals written on the cards. The students then match the two carriages to an engine displaying the numeral corresponding to the total. Students record addition and subtraction informally using drawings, words and numerals.</p>		 Literacy
<p><b>Dice toss</b>          Provide the students with two dice. Use dice which display a range of numerals other than those on a traditional die. Ask the students to take turns to roll the two dice and add them together to find the total. Provide material for students to record the number sentences.</p>		 Literacy
<p><b>Domino addition</b>          Prepare domino cards which resemble commercially produced dominoes, or use traditional dominoes for this activity. Provide the students with a supply of the domino cards, or dominoes, and writing material. Deal five dominoes to each student in the group. Ask the students to record both dot patterns displayed on the dominoes as addition number sentences.</p>		 Literacy



<p><b>Double-decker bus</b></p> <p>The “Double-decker bus” (see BLM DENS 1 on page 214) is made up of ten frames. It can be viewed as two ten frames, two ten strips or four groups of five for reinforcing quinary strategies. Pose problems using the “Double-decker bus”, such as, “Eleven passengers were already on the bus, three more got on at the next stop. How many passengers are now on the bus?” Model both subtraction and addition tasks on the IWB. Ask the students to complete the tasks, working in pairs with their own Double decker bus base boards.</p> <p><b>Doubles plus one</b></p> <p>Demonstrate the following procedure to the students. Join two equal groups of Unifix blocks to show a double fact, such as <math>5 + 5</math>. Display a number sentence to the students to describe the action of joining the two groups. Add one block to the second group of blocks. Ask the students to state the total and record the new number sentence. In the above example the new number sentence would be: <math>5 + 5 + 1 = 11</math>. Separate the two groups again and remove the block just joined. Place it above the second group. Discuss the number combination now formed and its link to the previous combination of numbers, for example: <math>5 + 5 + 1 = 5 + 6</math>. Explore other doubles plus one combinations.</p> <p>Students record addition and subtraction informally using drawings, words and numerals.</p>		 Literacy
<p><b>Doubles plus one bingo</b></p> <p>Provide the students with a bingo board displaying a 4x4 grid. Ask the students to place the numbers 5, 7, 9, 11, 13, 15, 17 and 19 randomly into the squares of the grid. Each number will need to be written twice. Call out doubles plus one facts, for example <math>6 + 7</math>, <math>9 + 10</math>, in random order. The students determine the answer and place a counter onto the bingo board if they are able to match a numeral to the answer. The first player to complete a line of four counters in any direction is the winner.</p> <p>Students record addition and subtraction informally using drawings, words and numerals.</p>		 Literacy  Critical and creative thinking

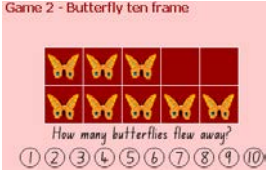
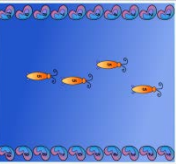
<p><b>Fact matching</b></p> <p>Construct two sets of cards. The first set consists of the “sum cards” and should contain one card for each numeral from 0 to 18. The second set consists of the “digit cards” and should contain four cards for each numeral from 0 to 9. Also provide cards displaying subtraction and addition symbols. Shuffle the “digit cards” and deal four cards to each student, placing them face up before the student. Shuffle the “sum cards” and place them in a pile, face up. Ask the students to use their digit cards to make a number fact which will equal the numeral shown on the top “sum card” displayed. For every number combination made, students score five points. After the students have made all possible combinations, ask the students to hand in their cards, shuffle all digit cards and deal four new cards to each player. Turn over a new “sum card” and repeat the process. The winner is the student with the highest score.</p> <p><i>Variation</i></p> <p>Deal six digit cards to each player. The student gains five points for combining two numbers which equal the “sum card” and ten points for correctly combining three digit cards which equal the “sum card”.</p> <p>Students record addition and subtraction informally using drawings, words and numerals.</p>		 Literacy
<p><b>Five dice</b></p> <p>Provide the students with five dice. Have the students take turns rolling the dice and finding the total of all five dice rolled. The first student to roll numbers that add up to twenty is the winner. Students can record their totals for each roll.</p> <p><i>Variation</i></p> <p>Have the students see if they can get a total of twenty within five turns. The results for each student for the five rolls can be recorded. The data could be used to generate a class graph of the results for the five dice.</p> <p>Students record addition and subtraction informally using drawings, words and numerals.</p>		 Literacy

<p><b>Ghost busters</b>          Prepare “Ghost buster” base boards using the BLM DENS 1 on page 288. Write the numerals 0, 10, 20, 30, 40, 50, 60, 70, 80, 90 and 100 on the outlines of the ghosts on the base board. Prepare two dice, one displaying 10, 20, 30, 40, 50, 60 and the other displaying 0, 10, 20, 30, 40. If the second dice has 6 sides, double-up on one of the displayed numerals or add an appropriate variation to the game. Give each student fifteen counters and bundles of ten items, such as ten strips or towers of ten Unifix cubes. Ask the students to take turns to roll the two dice. Students then add the dice together using the materials to support them with their counting. They then place a counter onto a ghost displaying the corresponding numeral. The winner is the first to cover all the ghosts.          Variation          Change the task to a subtraction one.</p> <p>Students record addition and subtraction informally using drawings, words and numerals.</p>		 Literacy
<p><b>Near doubles</b>          Provide the students with a supply of Unifix cubes. Call out an addition sum, such as <math>5 + 7</math>, where the addends differ by two. Instruct the students to make the two numbers called using the Unifix cubes and to record the number sentence. Ask the students to move one block from the second group (in this example, 7) and place it with the first group (the group of 5). Have the students record the two groups now. Discuss how <math>6 + 6 = 5 + 7</math>.          Students record addition and subtraction informally using drawings, words and numerals.</p>		
<p><b>Orange tree</b>          Provide each pair of students with an outline of an orange tree (see BLMs DENS 1 on pages 286-287) and 20 counters. Instruct the students to place the counters onto the tree. The students then “pick” the oranges from the tree by moving nominated numbers of counters away. Ask the students to determine how many “oranges” are left on the tree and to record the number combinations.</p>		 Literacy

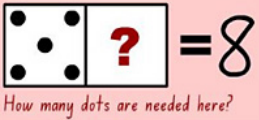


<p><b>Number balances</b></p> <p>Prepare a stencil displaying a balance. The stencil should show one box resting on the left-hand side of the balance and two boxes stacked on the right-hand side of the balance. Prepare two sets of numeral cards, each set on a different coloured cardboard. The first set should contain the numerals 2 to 20 and the second set contains two cards for each numeral from 1 to 10. Have the students select a card from the first set and place it onto the left-hand side of the balance. Students then find two numeral cards from the second set which, when added together, total the numeral on the left side. The students then place the cards on the right side of the balance. Students record addition and subtraction informally using drawings, words and numerals.</p>		 Literacy
<p><b>Outdoor bean bag target</b></p> <p>Draw a large target on the asphalt with chalk. Write a number which is a multiple of ten on each segment of the target. Organise the students into teams and provide each team with two bean bags. Have the students take turns to throw the bean bags onto the target. Students call out the number that the bean bags land on and then find the total. Organise a “recorder” for each team to keep a record of the team’s score. It may be necessary to provide the scorer with a calculator. Students record addition and subtraction informally using drawings, words and numerals.</p>		 Literacy
<p><b>Put in, take out</b></p> <p>Prepare a set of “start with” cards displaying the numerals from eleven to twenty on coloured card, and a set of “put in” cards displaying the numerals from zero to nine on a different coloured card. Students will also require a large container and a supply of items, such as counters or beads, and writing material. Alternatively, if the students are able to read “start with” and “put in”, both sets of cards can be on the same coloured cardboard with the instructions written on them. Ask the first student to take a “start with” card from the pack, read the numeral and put a corresponding number of items into the container. The student then takes a “put in” card from the other pack, reads the numeral and collects the corresponding number of additional items to add to the container. Encourage the students to say what the total will be before they check by counting on from the first group as each additional item is dropped into the container. Have the students record their actions as number sentences.</p>		 Literacy

<p><b>Race to the pool</b>          Prepare an adequate supply of base boards using the BLM on DENS 1 page 284. Organise students into pairs and provide them with two dice and two markers. Have the students place their markers at the starting position on the base board. Ask the students to take turns to roll the dice and add both numbers rolled. The student then moves the marker to the first corresponding numeral on the base board. The first player to reach the “pool” at the centre of the board wins. Students record addition and subtraction informally using drawings, words and numerals.</p>		 Literacy
<p><b>Return to mother ship</b>          Construct large “mother” spaceships from cardboard. Write a numeral from ten to twenty on each “mother ship”. Construct small cardboard spaceships which display addition and subtraction facts resulting in answers from 10 to 20. Ask the students to solve the number problems on each small spaceship and match them to a “mother ship” displaying a corresponding numeral.</p>		 Literacy
<p><b>Sentence maker</b>          Provide each student with a collection of numeral cards from zero to ten and a calculator. Call out a number between eleven and twenty. Allow two or three minutes for students to select number cards which add to the nominated number. Encourage the students to find all the possible number combinations for the nominated number. The students should record each number combination. After the allotted time, have the students verify the additions with the use of the calculator.</p>		 Literacy

<p><b>Ten strips and hundred charts</b></p> <p>A ten strip is a line of ten boxes with a dot in each box. Organise an overhead projector, a supply of ten strips and a strip of four dots all on transparencies. You will also need a large hundred chart. Display the strip of four dots on the overhead projector. Ask the students: “How many dots?”. Place a ten strip below the four dots and repeat the question. After the students determine the answer, indicate the corresponding numeral on the hundred chart. Continue by adding one ten strip at a time and locating the total on the hundred chart.</p> <p>Variations</p> <ul style="list-style-type: none"> <li>• Ask the students to predict the next number if 10 more dots are added, 20 more, and so on.</li> <li>• Substitute a ten frame for the dot strips.</li> </ul> <p>Students record addition and subtraction informally using drawings, words and numerals.</p>		 Literacy
<p><b>Three-dice game</b></p> <p>Prepare a set of numeral cards for the numbers three to eighteen. Lay the cards face up in a line on the desk or floor. Have the students take turns to roll three dice and add together the numbers rolled, then take a corresponding numeral card. The game continues until all cards have been taken. If the numeral card has already been taken, the player’s turn is forfeited.</p> <p><i>Variations</i></p> <ul style="list-style-type: none"> <li>• Use a variety of dice, such as dot and numeral dice.</li> <li>• Provide each student with a set of numeral cards for the numbers three to eighteen. Have the students take turns to roll three dice and find the total. Each time a student states the total of the three dice, all students place a counter on the corresponding numeral card in their set. The game continues until all numerals have been covered. Students record addition and subtraction informally using drawings, words and numerals.</li> </ul>		 Literacy

<p><b>Unit squares</b></p> <p>Provide the students with thirteen squares of paper. Each square should have one side coloured green and the other side red. Place the cards in a line in front of the students, with the red side face up. Indicate to the students that the squares represent the number sentence: <math>13 + 0 = 13</math>. Turn one card over to reveal a green side and discuss the number sentence that is now represented by the green and red squares, that is, <math>12 + 1 = 13</math>. Continue turning over additional cards to reveal the green side. Encourage the students to state the number combinations represented by the red and green squares. Vary the number of coloured squares used. Students record addition and subtraction informally using drawings, words and numerals.</p>		<p>Literacy</p>
<p><b>Using Technology to Teach Mathematics</b></p>		
<p><b>Butterfly Tens Frames</b></p> <p>Students must determine how many butterflies flew away and how many are left on the ten frame.</p> 		<p>Literacy Information and communication technology capability</p>
<p><b>Butterfly Wings</b></p> <p>A number is displayed on the butterfly body and students drag a left and right wing over to make that total.</p> 		<p>Literacy Information and communication technology capability</p>
<p><b>Dominoes</b></p> <p>Children say how many more dots on the domino are needed to make the number.</p>		



<p>Game 3 - Dominoes</p>  <p>How many dots are needed here?</p>		
<p><b>Eggs In A Carton</b></p> <p>Children say how many eggs are still in the carton out of 6 or 12 eggs by viewing how many eggs have been taken out.</p> 		<p>Information and communication technology capability</p>
<p><b>Penguin pins</b></p> <p>Select to play with 10 or 21 penguins. Click Start. The ball will bowl down some penguins. Work out how many penguins are still standing and how many were knocked down. Write your answers into the white boxes and press "check". Press "reset" to play again. If the answer is incorrect it must be corrected before playing again.</p> 		<p>Information and communication technology capability</p>
<p><b>Mathletics:</b></p> <ul style="list-style-type: none"> <li>• Model addition</li> <li>• Adding to make 5 and 10</li> <li>• Adding to ten</li> <li>• Model subtraction</li> <li>• Subtracting from ten</li> </ul>		
<p><b>Ideal Resources:</b></p> <ul style="list-style-type: none"> <li>• Ghostbusters 11</li> <li>• Ghostblaster 111</li> <li>• Sum Sense</li> </ul>		

<ul style="list-style-type: none"> <li>• Top Spot (1)</li> <li>• Eggs on Legs (addition)</li> </ul>		
<p><b>Story Books</b></p> <ul style="list-style-type: none"> <li>- Counting On Frank by Rod Clement</li> <li>- Five Little Monkeys: Over 50 action and counting rhymes by Zita Newcome</li> <li>- Ten in the bed and other counting rhymes by Zita Newcome</li> <li>- Ten red apples by Pat Hutchins</li> </ul>		
<p><b>Other Activities</b></p>		