Unit 8  Number Sense: Addition within 5

Introduction
In this unit, students will begin by acting out addition situations—an intuitive approach to addition—within 5. They will then look at amounts less than or equal to 5 as being composed of two smaller quantities, and they will start decomposing these amounts into smaller pairs. They will practise the perceptual and conceptual subitizing of quantities less than 5 in dot patterns. (Perceptual subitizing is the assessment of quantity at a glance, without counting. Conceptual subitizing involves assessing quantity by combining two quantities that were subitized perceptually.)

Students then proceed to formalize addition in the most intuitive context (first introduced in Lesson NSK-43). That is, by adding to an existing quantity, first using manipulatives and then using pictures; for example, two children are playing and then one more child joins them. The concept of addition is then extended to “putting together,” or combining, two quantities; for example, three green apples and two red apples makes five apples. Finally, students will begin adding within 5 without a context. The last lesson in the unit focuses on adding 0 or 1 only.

Reading and writing addition expressions and equations will be developed gradually throughout the unit. When symbols are first introduced, read them aloud yourself. Only after several lessons of passive exposure are students expected to read and understand the symbols on their own. By the time students are adding within 5 (Lesson NSK-52), they should understand and be able to model addition expressions, as well as complete addition equations that have been modelled.

Meeting Your Curriculum
Alberta—Lessons NSK-44 to NSK-46 on decomposing and subitizing are required. The counting lesson, NSK-42, and the lesson introducing addition through dramatic play, NSK-43, are recommended. All other lessons in this unit are optional. However, we suggest teaching Lessons NSK-47 and NSK-49 if you would like students to have exposure to addition through the use of manipulatives.

British Columbia—Lessons NSK-43 to NSK-47 and NSK-49 are required, including Activity Centre 1 in Lesson NSK-49. The counting lesson, NSK-42, is recommended. All other lessons in this unit are optional.

Manitoba—Lessons NSK-44 to NSK-46 on decomposing and subitizing are required. The counting lesson, NSK-42, and the lesson introducing addition through dramatic play, NSK-43, are recommended. All other lessons in this unit are optional. However, we suggest teaching Lessons NSK-47 and NSK-49 if you would like students to have exposure to addition through the use of manipulatives.

Ontario—All lessons in this unit are required except Lessons NSK-52 and NSK-53, which are optional. However, we suggest teaching Lesson NSK-52 as it completes the formal introduction to addition. Lesson NSK-53 is an advanced lesson that includes adding zero.
**Materials.** In addition to the BLMs provided at the end of this unit, the following Generic BLMs, found in section S, are used in Unit 8:

- BLM Hundreds Chart (p. S-1)
- BLM Number Lines (p. S-9)
- BLM Number Cards 0 to 5 (p. S-10)
- BLM Game Cards (p. S-12)
- BLM Making a Number (p. S-13)
- BLM Animal Cards (pp. S-18–19)
- BLM Making 5 (p. S-14)
- BLM Dominoes (1) to (2) (pp. S-15–16)
- BLM I Have ___, Who Has ___? (p. S-20)
- BLM Pattern Blocks (p. S-8)
- BLM Addition Story Blanks (p. S-20)
- BLM Pets (1) (p. S-22)
- BLM Addition (p. S-24)
- BLM Additions within 5 (pp. S-25–26)
- BLM Adding Three Numbers (pp. S-27–28)

**Recurring activities.** The following activities recur several times in the unit, with variations.

**Five Counters**  
*Type:* Individual  
*Objective:* To model decompositions that make 5 using two-sided counters  
*Preparation:* Give each student 5 two-sided counters (or dried beans painted on one side), a paper cup, and BLM Making 5.  
*Instructions:* Have students gently tip the counters from the cup onto a table and sort the counters by colour. Students then write the decomposition on the BLM.  
*Variation:* Have students use BLM Five-Frames (with the answer, 5, filled in by you) to draw a picture of the counters and complete the decomposition.

**Adding with Objects**  
*Type:* Individual  
*Objective:* To find the total in addition stories using blocks  
*Preparation:* Provide each student with blocks or counters, BLM Adding Stories (1), and two yarn circles. Instead of yarn circles, students can also use a set of boxes from BLM Adding with Objects (1).  
*Instructions:* Have students place blocks inside the yarn circles to model each addition on BLM Adding Stories (1).  
*Bonus:* Write stories such as “2 cats and 3 more cats” for students. Have students find and circle the numbers, add them, and then write the answer.

**Adding Jumps**  
*Type:* Pairs, active  
*Objective:* To practise counting and adding a number of jumps  
*Preparation:* Distribute blocks or counters and two yarn circles to each student pair.
Instructions: Player 1 jumps up to four times. In the first yarn circle, Player 2 puts one block for each jump. Player 1 then jumps again up to four times. In the second circle, Player 2 places one block for each jump. Together, players count the blocks. Have players switch roles and repeat. Variations:
1. Distribute number cards (two 1s, two 2s, and one 3) or use the cards from BLM Number Cards 0 to 5. Player 1 selects a card to determine how many times to jump and then jumps that many times. Alternatively, provide number cards for 1 to 4 and have Player 1 select a card before each set of jumps.
2. Have students record their jumps using BLM Adding Stories (3).
Bonus: Have students record their jumps using BLM Adding Stories (3).

I Have ____, Who Has ____?
Type: Small groups
Objective: To find a match
Preparation: In advance, make cards using BLM I Have ____, Who Has ____?. For “I have,” draw a picture of an addition within 5 that students can work out in advance—use one type of object in the picture (for example, circles being added to circles). For “Who has,” write a number from 2 to 5. Make sure that the bottom of each card can be matched to the top of another card. Example:

```
I have
○ ○

Who has
○ ○ ○
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For the sample card above, students need to find a picture of an addition that adds to 4 on the top of a card and 5 on the bottom of another card.
Instructions: The player who has the card shown would say, “I have 2 plus 3. That makes 5. Who has 4?” The player who has a card with a picture of two shaded circles and two empty circles would respond similarly (“I have 2 plus 2. That makes 4. Who has …?”). Demonstrate how to play the game before breaking the class into small groups. The game ends when all players’ cards have been played.

Matching
Type: Individual or pairs
Objective: To find matches for all cards
Preparation: In advance, make four pairs of matching cards using BLM Game Cards. Use the boxes to write a number from 2 to 5 and one addition for each number you wrote (e.g., 4, 1 + 3).
Instructions: Place the cards face up. Students take turns to match an addition card with the number card showing the total of the addition. When a match is found, students remove the cards from play. The game ends when all cards have been paired.
Variation: Memory. Place the cards face down. Students turn up two cards at a time. If the cards match, students remove the cards from play; otherwise, they turn the cards face down again. Students can play independently or co-operatively in pairs. If played in pairs, each player turns over one card per round. Players take turns turning over the first card.

Assessment. The assessment checklist for this unit can be found in section T.
NSK-43  Acting Out Addition

Pages 26–27

Curriculum Requirement:
AB: recommended
BC: required
MB: recommended
ON: required

Goals:
Students will act out “add to” additions within 5.

Prior Knowledge Required:
Can count to 5

Vocabulary: add, all, more, plus

Materials:
5 books
BLM Number Cards 0 to 5 (p. S-10, see Extension 1)
magazines and scissors (see Extension 2)

Counting practice. Practise counting the numbers to 80. You may wish to have one or several students lead the count. Play Counting Out Time (see introduction to Unit 7, p. K-1).

Review the concept of more. Show a pile of two books and a pile of three books. ASK: Which pile has more books? (the pile of 3 books) SAY: “More” means bigger or larger in number. Sometimes we use “more” in a different way. If you eat some dinner and you are still hungry, you can have some more. Place two books on the table. SAY: I put two books on the table. Place a third book next to the first two. SAY: Now, I put down one more book.

Telling a number story. SAY: I am going to tell a story that has numbers in it: Two children are playing in the park. One more child comes to play with them. The end. ASK: At the end of the story, how many children are playing in the park? (let students answer—do not respond to the answers) Are you sure? SAY: Let’s act out the story and check. When the story starts, there are two children at the park. ASK: Who would like to be the children at the park? Ask two volunteers to be the children. SAY: Then, one more child comes to play in the park. Have a volunteer be the one more child. ASK: How many children are playing in the park now? (3) SAY: Two children and one more child make three children. There are three children in all.

Introduce addition language. Repeat with the following story: There are two children reading. Then two more children start to read. ASK: How many children are reading now? (4) SAY: We start with two readers, then two more readers come. When we add two more readers, we get four readers. When we add things, we get some more. ASK: How many readers are there in all? (4) SAY: Sometimes we say plus when we add things. So two readers plus two more readers make four readers in all.
Practise adding and addition language. Repeat with various other scenarios using the terms “add,” “plus,” and “how many in all.” You might allow students to take turns telling the story.

Preparing for the AP pages. Show students AP Book K.2, Unit 8, p. 26. Pointing to the group of three children in Question 1, SAY: This shows how many children are playing at the start. The second part shows how many more children come. You need to write how many children there are in all.

Show students AP Book K.2, Unit 8, p. 27. SAY: You need to count how many children are playing at the start and write the number. Next, you need to count how many more children come. Then find how many children in all.

Extensions
1. Students work in small groups. Provide each group with a set of number cards for 1 to 4 from BLM Number Cards 0 to 5. One student in each group picks two number cards and tells an addition story while the others act it out. Students decide together how many in all. Have students take turns telling a story.

2. Have students cut out pictures from magazines to create their own addition stories. For example, they could add a group of three dogs and a group of two more dogs.
Curriculum Requirement:
AB: required
BC: required
MB: required
ON: required

Goals:
Students will decompose numbers up to 5 in a variety of ways, using objects and pictures.

Prior Knowledge Required:
Can count to 5

Vocabulary: add, all, more, plus

Materials:
BLM Game Cards (p. S-12)
4 two-sided counters or dried beans painted on one side per student (see Activity Centre 1, Extensions 1–3)
paper cups (see Activity Centre 1)
BLM Making a Number (p. S-13, see Activity Centres 1–3, Extensions 1, 2)
4 plastic bowling pins or empty plastic water bottles and a soft ball per student or student pair (see Activity Centre 2)


NOTE: In this lesson, have students signal their answers by holding up fingers wherever possible.

Acting out decomposing up to 5. Have three volunteers come to the front of the class.
ASK: How many students are standing here? (3) Divide volunteers into two groups, two on your right, one on your left. Pointing to your right, ASK: How many students are here? (2) Then ask how many students are on your left. (1) SAY: We split three students into two students and one student. Repeat with four students separated into two and two, and one and three.

Decomposing 4 into two groups with pictures. Draw on the board:

\[ \bigtriangleup \quad \bigtriangleup \quad \bigtriangleup \]

ASK: How many triangles did I draw? (4) Have a volunteer check by counting. Write “3 and 1” below the triangles. ASK: How many do you think 3 and 1 more makes? (answers may vary)
SAY: I think 3 and 1 is 4. I will use a picture to show that 3 and 1 makes 4. I will separate the
triangles by drawing circles. The first number is 3, so I will draw a circle with three triangles in it. Circle the group of three triangles, as shown below:

3      and     1

ASK: How many triangles should go in the second circle? (1) How do you know? (because it says 1) Circle the remaining triangle, as shown below:

3      and     1

ASK: How many is 3 and 1? (4) How does the picture show that 3 and 1 is 4? (3 triangles in a circle and 1 triangle in a circle, 4 triangles in all) SAY: We broke 4 into two parts, a 3 and a 1.

Repeat with two plus two triangles, but ask volunteers to draw the circles. The final picture should look like this:

2      plus      2

Separating 5 into two parts. SAY: Let’s try another way to show making 5. Draw on the board:

ASK: How many circles did I draw? (5) Draw a vertical line across the rectangle to show 4 and 1. Indicating the left side, ASK: How many circles are in this part, on this side of the line? (4) Indicating the right side, ASK: How many circles are in this part? (1) What numbers does this picture show? (4 and 1) Write “5 is 4 plus 1” below the picture. Pointing to the 5, SAY: I have five circles (count all 5 circles), and I split them into 4 and 1. So we know that 5 is 4 plus 1.
The final picture should look like this:

5 is 4 plus 1

Repeat with 5 is 3 and 2.

Redraw the picture without the dividing line. ASK: Where do I draw the line to show that 5 is 1 and 4? (see answer below)

5 is 5 and 0

Erase the numbers in the equation and remove the separating line and redraw it at the end of the rectangle (see below). ASK: What if I put all the circles in the first part? How many are left in the second part? (0) What do I write? 5 is what plus what? PROMPT: How many are in the first part? (5) Write “5.” ASK: How many in the second part? (0) Write “0.” SAY: 5 is 5 and 0 more.

Separating 4 into groups. Draw on the board:

4 is 2 and 2

ASK: How many circles did I draw? (4) Draw a line to show 3 and 1. ASK: What parts does this picture show? (3 and 1) Write “4 is 3 and 1” below the picture.

Redraw the picture without the dividing line, and write “4 is 2 plus 2” below the picture. Have a volunteer draw the line to show the decomposition. Repeat for 4 is 0 and 4.

Activity

Addition dominoes. In advance, make cards using BLM Game Cards. On the left side, show a picture of three, four, or five circles in a frame, with a line separating them into two groups. On the right side, write an addition equation. Make sure that the right side of each card can be matched to the left side of another card and vice versa. Example:
Player 1 places a card and reads the two representations of equations. For the card shown, the player would say, “I have 4 is 3 and 1 and 4 is 2 and 2.” The player whose card matches the equation on the right side then places his or her card to make a chain. Demonstrate how to play the game before breaking the class into small groups. Each player plays once.

(end of activity)

Activity Centres

1. **Five Counters** (see unit introduction, p. L-2)
   *Variation:* Give each student four two-sided counters (or dried beans painted on one side), a paper cup, and BLM Making a Number (with the answer, 4, filled in by you for each addition).

2. **Bowling**
   *Type:* Individual or pairs, active
   *Objective:* To write the decompositions modelled by four bowling pins (some upright, some knocked over)
   *Preparation:* Set up a bowling lane using four plastic pins or empty plastic water bottles per student or per student pair. Provide a soft ball and BLM Making a Number. Since students might knock over either all or none of the pins, make sure students understand that “0 and 4” and “4 and 0” are 4 before they do the activity.
   *Instructions:* Set up four pins. Have students roll the ball once and then use the BLM (with the answer, 4, filled in by you for each addition) to write the decomposition shown by the number of pins knocked down and the number that stayed upright.

3. **Five Counters** (see unit introduction, p. L-2)
   *Variation:* Students play in pairs using fingers. Player 1 holds up a number of fingers on one hand (not the thumb). Player 2 counts how many fingers are up and how many fingers are down and writes the addition on BLM Making a Number (with the answer, 4, filled in by you for each addition). Players switch roles.

Extensions

1. Challenge students to find all the ways to make 4. Provide students with 4 two-sided counters and BLM Making a Number (with the answer filled in by you for each addition). Tell students to start with the counters all showing the same colour. Students fill in the numbers for the first equation (4 is 4 and 0) and then turn over counters one at a time and write the expression for each combination. Allow more advanced students to find their own way to answer the question.
   *Answers:* 4 is 4 and 0, 4 is 3 and 1, 4 is 2 and 2, 4 is 1 and 3, 4 is 0 and 4

2. Have students repeat Extension 1 to find all the ways to make 3, then 2. Ask students how many ways they can think of to break 1 into two parts.
   *Answers:* 3 is 3 and 0, 3 is 2 and 1, 3 is 1 and 2, 3 is 0 and 3; 2 is 2 and 0, 2 is 1 and 1, 2 is 0 and 2; there are two ways to make 1 (1 is 1 and 0, 1 is 0 and 1)
NOTE: Extension 3 is for advanced students.

3. a) Give students four counters and have them find all the ways to make 4 in three parts. Have students start without zero and then include it. Provide blank paper for them to record their work.

b) Have students make 4 in four parts without zero.

**Answers:** a) without zero: 1 and 1 and 2 (and any rearrangements of these numbers), with zero: 0 and 0 and 4, 0 and 1 and 3, 0 and 2 and 2 (and any rearrangements of these numbers);

b) 1 and 1 and 1 and 1
NSK-45  Decomposing 5

Pages 32–33

Curriculum Requirement:
AB: required
BC: required
MB: required
ON: required

Goals:
Students will decompose 5 in a variety of ways, using objects and pictures, and use those decompositions to answer questions about ways to share or partition five things.

Prior Knowledge Required:
Can count to 5

Vocabulary: all, five-frame, more, plus

Materials:
7 enlarged paper frogs from BLM Animal Cards (1) (p. S-18)
red and yellow chalk or markers
BLM Game Cards (p. S-12)
2 pencil crayons per student
BLM Five-Frames (p. L-50) or five-frames made from egg cartons
5 two-sided counters, 5 dried beans painted on one side, or 5 of each of two colours of blocks per student
paper cups (see Activity Centre 1)
BLM Making 5 (p. S-14, see Activity Centres 1–3, Extensions 1, 2)
5 plastic bowling pins or empty plastic water bottles and a soft ball per student or student pair (see Activity Centre 2)

Counting practice. Practise counting to 80. Count on and back within 5. Say the numbers 1 to 5 in random order and for each number ASK: What is the next number?

Introduce five-frames. Draw on the board:

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Point to the picture and SAY: This is a five-frame. It has five boxes. Count (or have a volunteer count) the boxes. SAY: The frame helps us to count quickly. If there is one thing in each box, then there must be five things in all.

ASK: Where else do we see the number 5? Where do we have five on our body? (fingers on one hand, toes on one foot) SAY: We can use five fingers on our hand to help us think about the number 5.
Affix five paper frogs to the board, one in each box of the five-frame. ASK: How many frogs are there? (5) SAY: Since there are five boxes and there is one frog in each box, there must be five frogs. Remove all the frogs, then put back only three; one per box, from left to right. ASK: Are there five frogs now? (no) How can you tell by looking at the five-frame that we do not have five frogs yet? (some boxes are empty) Add four more frogs by putting two frogs in each of the empty boxes. SAY: None of the boxes are empty. ASK: Are there five frogs now? (no) Why not? (some boxes have more than 1 frog) SAY: When there is exactly one frog in each box, I know that I have five frogs.

**Using a five-frame to take apart 5.** Draw a five-frame on the board, and colour the first two boxes red. SAY: This is a five-frame. ASK: How many boxes are red? (2) Write “2” below the red boxes. Colour the rest of the boxes yellow. ASK: How many boxes are yellow? (3) Write “3” below the yellow boxes. SAY: We have two red boxes plus three yellow boxes. Write “plus” between the 2 and the 3. ASK: How many boxes do we have in all? (5) Do you need to count to know that there are five in all? (no) Write “5 is” to the left of the addition. SAY: We can count to double check, but we know there are five boxes in the five-frame. The final picture should look like this:

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  5 is  2   plus  3
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Repeat with another five-frame with four red boxes and one yellow box. The final picture should look like this:

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  5 is  4   plus  1
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Pointing to the sentence, SAY: This five-frame shows that 5 is 4 + 1.

**Using a five-frame to model decomposition expressions.** Write “3 plus 2” on the board, and draw an empty five-frame. SAY: I can use the five-frame to show 3 plus 2. We will colour some boxes in red and the rest in yellow. ASK: To show 3 plus 2, how many boxes should we colour first? (3) SAY: We start by colouring the first number, 3, one colour. Have a volunteer colour three boxes red. ASK: How many do we colour now? (2) Have another volunteer colour the remaining two boxes yellow. Repeat with 1 plus 4 and 5 plus 0.

**Using a five-frame to answer partitioning questions.** SAY: I can use my five-frame to help answer questions about choosing five things. SAY: I want to buy some red apples and some yellow apples. I want five apples in all. ASK: How many red apples should I buy? (accept any answer from 1 to 4; for example, 2) How many boxes should I colour to show two red apples? (2) Colour two boxes red. SAY: I am buying five apples in all. Two are red. The rest are yellow. ASK: How many boxes should I colour yellow to show the green apples? (3 or the rest) SAY: All the other apples are yellow. There are three yellow apples. Colour the rest of the boxes yellow. Write “2 plus 3” below the five-frame.

SAY: Let’s choose a different number of red apples. Repeat the above with a new starting number.
**Activity**

**Show the addition.** In advance, prepare cards showing decompositions of 5 (for example, 2 and 3) using BLM Game Cards. Put a set of cards in each work centre. Give each student two pencil crayons and a five frame from BLM Five-Frames. Alternatively, use egg cartons to make five-frames by cutting rows of five cups from each carton. Give each student this five-frame along with either 5 two-sided counters, 5 dried beans painted on one side, or 5 each of two colours of blocks. Have students choose a card from the pile and model the decomposition shown using the five-frame.

*(end of activity)*

**Activity Centres**

**NOTE:** You may wish to laminate BLM Making 5 or place it in a protective plastic cover so that it can be wiped clean and re-used.

1. **Five Counters** (see unit introduction, p. L-2)

2. **Bowling**
   *Type:* Individual or pairs, active
   *Objective:* To write the decomposition modelled by five bowling pins (some upright, some knocked over)
   *Preparation:* Set up one bowling lane per student or per student pair, using five plastic pins or empty plastic water bottles. Provide a soft ball and BLM Making 5. Since students may knock over all or none of the pins, make sure they can use a five-frame to model “0 and 5” or “5 and 0” before they do the activity.
   *Instructions:* Set up five pins. Have students roll the ball once and then use the BLM to write the decomposition given by the pins that were knocked down and those that stayed upright.

3. **Five Counters** (see unit introduction, p. L-2)
   *Variation:* Students play in pairs using fingers. Player 1 holds up a number of fingers on one hand. Player 2 counts how many fingers are up and how many fingers are down and writes the decomposition on the BLM. Players switch roles.

**Extensions**

1. Challenge students to find all the ways to make 5. Provide students with 5 two-sided counters and BLM Making 5. Tell students to start with the counters all showing the same colour. Students write the expression for the first equation (5 is 5 plus 0) on the BLM and then turn over counters one at a time and write the expression for each combination. Allow more advanced students to find their own way to answer the question.
   *Answers:* 5 is 5 plus 0, 5 is 4 plus 1, 5 is 3 plus 2, 5 is 2 plus 3, 5 is 1 plus 4, 5 is 0 plus 5

2. Give students a five-frame from BLM Five-Frames (or a five-frame made from an egg carton) and two colours of counters; for example, red and yellow. Have students fill the five-frame so that there are more red than yellow counters. Then, have students find all the ways to fill the
five-frame so that there are more red than yellow counters. Students can either record their work on BLM Making 5 or use the paper five-frame as the recording.

**Answers:** 3 red, 2 yellow; 4 red, 1 yellow; 5 red, 0 yellow

**NOTE:** Extension 3 is for advanced students.

3. a) Give students five counters and have them find all the ways to make 5 in three parts. Have students start without zero, then include zero. Provide blank paper for them to record their work.

b) Have students make 5 in 4 parts without zero.

**Answers:**

a) without zero: 1 plus 1 plus 3, 1 plus 2 plus 2 (and any rearrangements of these numbers);

with zero: 0 plus 0 plus 5, 0 plus 1 plus 4, 0 plus 2 plus 3 (and any rearrangements of these numbers)

b) 1 plus 1 plus 1 plus 2 (and any rearrangements of these numbers)
NSK-46   Adding Small Numbers

Pages 34–37

Curriculum Requirement:
AB: required
BC: required
MB: required
ON: required

Goals:
Students will use fixed representations of the numbers 1 to 5 to develop fluency in adding within 5.

Prior Knowledge Required:
Can count to 5
Can add to make 5 in two parts
Can recognize up to five objects when presented in an organized way

Vocabulary: add, addition, all, part, plus, total

Materials:
7 cards showing die patterns made using cardstock and markers (see note below)
red and yellow chalk or markers
two-sided counters or dried beans painted on one side (see Activity Centres 1, 2, Extension 2)
paper cups (see Activity Centres 1, 2, Extension 2)
BLM Making 5 (p. S-14, see Activity Centre 1, Extension 2)
dominoes with dots that add to 5 or less or from BLM Dominoes (1) to (2) (pp. S-15–16, see Activity Centre 3, Extension 3)
pencil crayons, crayons, or markers (see Activity Centre 4)
BLM Colouring Dots (p. L-51, see Activity Centre 4)
2 dice per student or student pair (see Extension 1)

NOTE: In advance, use cardstock paper and markers or crayons to make a set of cards with one to five dots arranged like a die face, as shown below on the left. Make two additional cards, one with two dots and the other with three dots, as shown below on the right.

Counting practice. Practise counting to 80. Count on and back within 5. Say for the numbers 1 to 5 in random order and for each number ask students for the next two numbers.

Visualizing 1 to 5. On the board, draw three solid dots (as shown below on the left). ASK: If I draw lines between the dots, what shape will it make? (a triangle) Connect the dots to show the triangle. Repeat with four dots to make a square and two dots to make a line, as shown below:

1 2 3 4 5

6 7 8 9 10
One at a time, hold up different die-pattern cards and ask students how many dots there are. Discuss the patterns (e.g., three dots can make a triangle, four dots can make a square). Present the patterns in different orientations. Have students practise making the dot patterns for 1 to 5 by pretending their fingertips are dots and holding their fingers to match the dot patterns. Students can use two hands if needed. (Five dots may be awkward, but you might demonstrate some ways to make the pattern.) Then, have students close their eyes as you call out numbers between 1 and 5 and they make the patterns with their fingers.

**Adding with dot patterns.** Draw two yellow dots on the board, placing one dot above the other, as shown below in black. ASK: If I join the dots, what shape could this make? (a line) Draw a line connecting the dots to illustrate, and then erase the line. Draw a red dot, as shown below in grey. ASK: If I draw another dot and then join the dots, what shape could this make? (a triangle) Connect the dots to make a triangle. ASK: How many dots make a triangle? (3) Then, erase the lines and ask again. SAY: We started with a line with two dots. Then, we added one dot and got a triangle, which has three dots. So, 2 plus 1 is 3. Write the equation on the board:

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  ●
  ● ●
2 plus 1 is 3
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SAY: We call how many there are in the whole picture the total. When we add, the total is how many in all. We made the total, 3 (draw a circle, as shown below), from two parts, a 2 and a 1. Draw boxes around the two parts, as shown below:

```
  ●
  ● ●
2 plus 1 is 3
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SAY: We add the parts to make the total. Repeat with 2 plus 2 is 4, 3 plus 1 is 4, and 2 plus 3 is 5. For each one, identify the parts and the total.

**Developing fluency with pictures.** Show two die-pattern cards at a time (with the total no greater than 5), and have the class signal how many dots in all. (The intention is to develop speed and accuracy for the whole class.) For example, show a 2 and a 3. ASK: How many dots in all? (5) What are the parts? (2 and 3) What is the addition? (2 plus 3 is 5) Show the 5 card and describe various ways to see it (e.g., 1 plus 4, 3 plus 2, etc.).

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**Activity Centres**

1. **Five Counters** (see unit introduction, p. L-2)

*Variation:* After students sort the counters or beans by colour, they rearrange them to show a die pattern and then write the addition on BLM Making 5 or scrap paper.
**Bonus:** Students gently tip the counters once onto a table and try to create an addition for each number from 2 to 5. For example, if the counters land as 4 red and 1 yellow, a student could produce: 1 red plus 1 yellow is 2, 2 red plus 1 yellow is 3, 3 red plus 1 yellow is 4, and finally 4 red plus 1 yellow is 5.

2. **Five Counters** (see unit introduction, p. L-2)
   **Variation:** Students play in pairs and take turns calling out the addition equation that the counters show (without rearranging the counters in a die pattern).

3. **Practise for Fluency**
   **Type:** Pairs
   **Objective:** To develop fluency in composing 5
   **Preparation:** In advance, gather dominoes with dots that add to 5 or less, or prepare dominoes from BLM Dominoes (1).
   **Instructions:** Players place the dominoes face down between them. Player 1 turns over a domino and says how many in all. If Player 2 agrees with the answer, the domino stays face up. Otherwise, Player 1 turns it face down again. Players switch roles. Play continues until all the dominoes are facing up.

4. **Colouring Dots for Decomposition**
   **Type:** Individual
   **Objective:** To create and record a die pattern that shows decomposition
   **Preparation:** Give each student two colours of pencil crayons, crayons, or markers, and cards cut from BLM Colouring Dots.
   **Instructions:** For each card, students colour up to five dots in two colours and then write the decomposition.
   **Bonus:** Students use three colours. In advance, add a third blank and a plus sign to each equation template, or have students do so.

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**Extensions**

1. Give each student or student pair two dice. If playing in pairs, students take turns rolling the dice, ordering the dice so that they start with the higher roll first and then counting on using the second die to find the total. For example, if they roll 6 and 4, students point to the die with 6 and say “6” and then continue counting as they point once to each dot on the die with 4 and say “7, 8, 9, 10.”

2. Repeat Activity Centres 1 and 2 using any number of counters up to 12.

3. Repeat Activity Centre 3 using dominoes with dots that add to 9 or less, or prepare dominoes from BLM Dominoes (1) to (2).
NSK-47  Adding with Objects

Pages 38–40

Curriculum Requirement:
AB: optional
BC: required
MB: optional
ON: required

Goals:
Students will model “add to” additions within 5 with objects.
Students will be introduced to the plus sign (+).

Prior Knowledge Required:
Can count to 5
Can act out addition within 5
Can use objects to represent animals
Can use fingers to represent numbers
Knows numbers less than 5
Knows what a circle is
Knows what zero (0) is

Vocabulary: add, all, more, plus, plus sign (+)

Materials:
blocks or counters
BLM Adding Stories (1) to (3) (pp. L-52–55, see Activity Centres 1–4, Extensions 1, 3)
yarn circles (see Activity Centres 1, 3–5, Extensions 1, 2)
BLM Adding with Objects (1) (p. L-56, see Activity Centre 1)
BLM Number Cards 0 to 5 (p. S-10, see Activity Centres 3–5)
miniature model animals or BLM Animal Cards (pp. S-18–19, see Activity Centre 5)
scissors and glue (see Activity Centre 5)

Counting practice. Practise counting to 80. Choose a number from 1 to 5. ASK: What is one more?

Review acting out addition. SAY: Let’s act out a number story. In this story, two bunnies are eating a carrot, and then one more bunny comes to eat. Ask volunteers to be the first two bunnies, and then have a third volunteer join them as the third bunny. ASK: How many bunnies are eating in all? (3) How do you know? (3 people are pretending to be bunnies)
Adding with objects instead of people. SAY: Let’s do the same story another way. This time, we will show our story using blocks. Two bunnies are eating. Then, one more bunny comes to eat. Draw on the board:

2 bunnies plus 1 more bunny

Read aloud the addition you just wrote. SAY: We will use blocks to show the bunnies. ASK: How many bunnies do we need to start with? (2) Where did I write the number we start with? Have a volunteer point to the 2 on the board. ASK: How many blocks do we need? (2) Affix two blocks to the board in the first box. SAY: We put two blocks in the box below the number 2. ASK: How many more bunnies come? (1) Where do you see the 1? Have a volunteer point to the 1 on the board. ASK: How many blocks do we need to show one more bunny? (1) Where should I put the block? (in the box below the 1) Affix one block in the second box. ASK: How many bunnies do we have in all? Have a volunteer count the bunnies. (3) Write the answer under the picture, and draw a line below it (to mimic an answer line). The final picture should look like this:

2 bunnies plus 1 more bunny

3 bunnies

ASK: Did we get the same answer using blocks as we did using people? (yes) Why is the answer the same? (the numbers are the same, 2 and 1)

Introduce the plus sign (+). Pointing to the story on the board, SAY: Two bunnies plus one more bunny make three bunnies. In math, we use a sign to write plus. Write “+” above the word “plus.” SAY: This is called a plus sign.

SAY: Let’s do another story with blocks. One day, three frogs are sitting on a log. Then, two more frogs come to sit with them. Draw on the board:

3 frogs + 2 more frogs

Read aloud what you have written. Pointing to the plus sign, SAY: This says “plus.” ASK: How many frogs does the story start with? (3) Have a volunteer point to the 3 on the board. Have students show 3 using their fingers. ASK: How many blocks do we need? (3) Where should we put them? (in the first box) ASK: How many more frogs come? (2) Point to the 2. Have students show 2 using their fingers. ASK: How many blocks do we need to show two more frogs? (2)
Does it matter what colour the blocks are? (answers may vary) SAY: We could use green blocks for green frogs, but we can also use any colour. ASK: Where should we put the two blocks? (in the second box) Affix two blocks in the second box. ASK: How many frogs do we have in all? (5) How do you know? (we can count them) Have a volunteer count the frogs. SAY: Show me three fingers for the three frogs. Keep those three frogs. Now, show me two more frogs on your fingers. ASK: How many frogs are you showing in all? (5) Write the answer on the board, and draw a line below it, as shown below:

3 frogs + 2 more frogs

5 frogs

ASK: Would the answer be different if we used people instead of blocks? (no) What if we used counters? (no) What are we doing when we say that three frogs plus two more frogs make five frogs? (adding)

Repeat, if necessary, with one apple and three more apples using counters instead of blocks. The final drawing should look like this:

1 apple + 3 more apples

4 apples

ASK: Would the answer be different if we used blocks instead of counters? (no) SAY: We can count using anything we like. The important part is to get the correct numbers.

Activity
Show students Questions 1–2 on AP Book K.2, Unit 8, p. 38. SAY: This page shows two number stories. The first one says “1 frog plus 2 more frogs.” Your job is to find how many frogs there are in all. You will put blocks or counters in the first box to show how many at the start. Next, you will put blocks or counters in the second box to show how many more. ASK: How will you find how many in all? (count) SAY: Then, you will count all the blocks and write how many in all (indicate the answer space provided).

Pointing to the second story, ASK: What are the numbers in the story? (students should point to the 4 and the 1) What is this story about? (cats)

Have students complete AP Book K.2, Unit 8, pp. 38–40. Have blocks or counters available for each student. Students place manipulatives in the boxes provided to model the addition and then record the answer.

(end of activity)
Activity Centres

1. **Adding with Objects** (see unit introduction, p. L-2)

2. **Adding with Objects** (see unit introduction, p. L-2)
   
   *Variation:* Students count on their fingers instead of using blocks and yarn circles. SAY: We can use our fingers to keep track of number stories. Let’s try it together with this story: One day, two ants crawl up a wall. Have students show 2 using their fingers. SAY: Keep two fingers up. Then, one more ant crawls up the wall. ASK: How many more fingers do you need to show? (1) SAY: Show me one finger on your other hand. ASK: How many fingers are you showing in all? (3) SAY: Now there are three ants on the wall. Repeat with the first story on BLM Adding Stories (1). Show students where to write the answer.
   
   *Bonus:* Have students do the additions using the fingers on one hand.

3. **Adding Jumps** (see unit introduction, p. L-2)

4. **Adding Jumps** (see unit introduction, p. L-2)
   
   *Variation:* Player 1 claps instead of jumping.

5. **Telling Addition Stories**
   
   *Type:* Pairs, imaginative
   
   *Objective:* To make up and answer addition stories
   
   *Preparation:* Give each student pair counters or blocks and two yarn circles. As an option, you may give students miniature models of animals (or a set of BLM Animal Cards) to illustrate their stories and number cards for 1 to 4 from BLM Number Cards 0 to 5 to determine how many.
   
   *Explanation:* SAY: You can make up your own number stories and tell them to each other. To the first student in the pair, ASK: What would you like your story to be about? (sample answer: horses) How many horses are there? Pick a number smaller than 5. (sample answer: 3) SAY: So, there are three horses. Give the second student in the pair two yarn circles and SAY: Put three horses in the first circle. ASK: What can we use for horses? (counters or blocks) Have the second student put three counters or blocks in the first yarn circle. To the first student, ASK: How many more horses come? (sample answer: 1) To the second student, ASK: How many counters or blocks go in the second circle? (1) Have the second student put four counters or blocks in the other yarn circle. ASK: How many horses are there in all? (4) Have students take turns telling stories and adding. SAY: You can choose numbers or pick a number card.
   
   *Variation:* Have students keep track of stories with fingers instead of blocks.

**Extensions**

1. Use BLM Adding Stories (2) and (3) to show students addition stories that include zero. Students can use yarn circles and blocks or counters to model the addition story and add.

2. Distribute 10 blocks or counters and three yarn circles to each student. Tell students a story that involves three numbers. Do not exceed a total of 10 (e.g., 2, then 1 more, and then 3 more
equals 6). For example, SAY: Two children are in the tent. ASK: How many blocks go in the first circle? (2) SAY: One more child goes into the tent. ASK: How many blocks go in the second circle? (1) SAY: Then three more children go into the tent after that. Put blocks in the third circle to show three more children. ASK: How many children are in the tent in all? Count them all. (6) Repeat with more examples. 

Bonus: Have students make their own stories.

3. Distribute BLM Adding Stories (2) or (3) and up to seven blocks or counters. Give students a starting number; for example, 2. Ask them to write all the number stories they can think of that start with “Two frogs and then some more frogs come.” Have them use blocks to help find how many in all for each story.
Five-Frames

\[ \begin{array}{c}
\hline
\square & \square & \square & \square & \square \\
\hline
+ & + & = \\
\hline
\end{array} \]

\[ \begin{array}{c}
\hline
\square & \square & \square & \square & \square \\
\hline
+ & + & = \\
\hline
\end{array} \]

\[ \begin{array}{c}
\hline
\square & \square & \square & \square & \square \\
\hline
+ & + & = \\
\hline
\end{array} \]
Colouring Dots

_____ and _____

is _____

_____ and _____

is _____

_____ and _____

is _____

_____ and _____

is _____
Adding Stories (I)

☐ How many in all?

1. 2 cats + 2 more cats is _______ cats

2. 1 dog + 4 more dogs is _______ dogs

3. 3 fish + 1 more fish is _______ fish

4. 3 frogs + 2 more frogs is _______ frogs
Adding Stories (2)

1. __________ + __________ more
   = __________

2. __________ + __________ more
   = __________

3. __________ + __________ more
   = __________
Adding Stories (3)

\[ \begin{array}{c}
\hline
\text{_________} + \text{_________} = \text{_________} \\
\hline
\end{array} \]

\[ \begin{array}{c}
\hline
\text{_________} \text{jumps} + \text{_________} \text{more jumps} = \text{_________} \text{jumps} \\
\hline
\end{array} \]

\[ \begin{array}{c}
\hline
\text{_________} \text{claps} + \text{_________} \text{more claps} = \text{_________} \text{claps} \\
\hline
\end{array} \]
Adding Stories (4)

1.  
   
   
   
   
   
   = pets

2.  
   
   
   
   
   
   = bugs

3.  
   
   
   
   
   
   = children
Number Cards 0 to 5

0 3

2 5

- 4

Number Cards 0 to 5
Making a Number

---

--- is --- and ---

--- is --- and ---

--- is --- and ---

--- is --- and ---

--- is --- and ---

--- is --- and ---

--- is --- and ---

--- is --- and ---
Making 5

5 is _______ and _______

5 is _______ and _______

5 is _______ and _______

5 is _______ and _______

5 is _______ and _______

5 is _______ and _______

5 is _______ and _______

5 is _______ and _______
Animal Cards (2)

- Zebra
- Giraffe
- Polar Bear
- Fish
- Cow
- Horse
- Beaver
- Rabbit
- Snake