

# Counting

## During this unit look for children who can:

- count from a given number
- count on and count back
- use counting strategies to count objects
- count collections up to 100
- identify numbers more or less than a given number
- order numbers to 100
- write numbers to 100.

When planning this week's work choose activities from 'Whole Class Focus', 'Independent Maths' and 'Reflection', e.g. if the ☀ activity is selected in the 'Whole Class Focus', then the 🌙 activity should be selected in the 'Independent Maths' and 'Reflection'.

## Resources

Student Book pp. 5–6; BLMs 1, 2, 48, 49, 50, 53, 66 & 70; BMS Big Book 3rd Year of School pp. 2–3; NTO 1 'Grouping Counters'; L2321 'Number trains: numbers 90–120'

jelly beans, photographs of large collections of objects, counters, coloured pegs, coloured paper, commercial dot-to-dot books, sticky dots, picture stamps and stamp pads, ice-cream containers, *Kid Pix Studio Deluxe*, number cards between 50 and 100 (BLMs 48–50), BLM 1 'Dot Picture', BLM 53 'Blank Number Line', BLM 2 'Dot-to-dot', BLM 70 'Grid Paper', BLM 66 'Cube Nets'

## Maths Talk

Model the following vocabulary in discussion throughout the week: count on, count back, next number, number before, number after, more than, less than, count by 2s, find patterns



## WHOLE CLASS FOCUS: Introducing the Concept



### 100 Dots

Show children the dot picture on BLM 1 'Dot Picture'. Ask, 'How many dots can you see in this picture? What do we need to think about to make sure we have counted all the dots?' Allow time for children to discuss strategies. Encourage them to look for groups of dots to count separately.



### Counting to 100

Give each child a number card between 50 and 100 (BLMs 48–50 'Numbers to 100') and access to counters. Ask, 'What do you need to think about to count out a group of that size?' Discuss responses. Ask children to group counters to match the number on the card. Have a partner check. Ask, 'What strategies did you use to make sure that you counted all the counters?' Allow time for discussion. Encourage children to use a range of strategies, such as moving the counters individually as they count them, lining them up in groups of ten, counting by 2s, counting separate groups. Have children use NTO 1 'Grouping Counters' to illustrate their thinking processes to the class.



### Let's Count

Have children practise counting silently as you clap a given number of times. Say, for example, 'Now I want you to count on from 254 silently.' Clap five times. Ask, 'Which number have you got to? What did you think about to work out the answer?' Promote discussion about the thinking processes needed. Repeat this activity asking children to count back from a given number. Have children practise in pairs. One child says the starting number and then claps a number of times. Their partner counts on or back silently.

### **Blank Number Line (BLM 53)**

Enlarge the BLM and assemble. Place somewhere on the number line a number card within the appropriate range for the children, e.g. 36. Place pegs on the line at various positions before or after the number. Ask, 'Which number will we find under the red peg? How did you work that out? Which number will be under the blue peg?' Repeat several times with different numbers.

### **A Dotty Problem**

Have children look at commercial dot-to-dot books or use an enlarged copy of BLM 2 'Dot-to-dot'. Ask, 'How do you do these types of puzzles? What do you need to think about to do them?' Model making a dot-to-dot by drawing a picture on paper, placing tracing paper over it and marking along its outline the dots you need. Write in the numbers. Discuss the thinking processes needed to create this dot-to-dot. Make another dot-to-dot with children, starting at a number higher than one.



## **SMALL GROUP FOCUS:** Applying the Concept Focus Teaching Group

### **Counting Collections**

Show children pp. 2–3 from *BMS Big Book 3rd Year of School*. Ask, for example, 'How can we count the number of hats in the picture? What do we need to think about to make sure we don't leave any out?' Promote discussion about different strategies for counting fixed objects, e.g. looking for lines and patterns, counting regions, counting by a characteristic such as colour. Guide children to count collections in a number of photographs. Discuss the strategies they use. Have them work independently to make their own pictures of collections (using *Kid Pix Studio Deluxe* stamps or other stamps on paper) for other children in the group to count. For less advanced children, limit the number of objects to be counted.

### **Colourful Number Lines**

Show children a prepared number line with numbers in the appropriate range (use BLM 53). Ask, 'What do number lines tell us?' Promote discussion about how number lines work. Cover some of the numbers. Ask, 'Which numbers have I covered? How do you know?' Repeat, drawing out the need to look at the numbers before and after. Have children work independently (using coloured paper) to make their own number lines showing a selected range of numbers. More advanced children can work in higher number ranges.

### **Jelly Beans**

Show children a bag of multicoloured jelly beans. Ask, 'How many jelly beans do you think are in this bag? How can we work it out?' Discuss strategies for counting them, e.g. separating them into different colours, moving them individually as they count them, counting by 2s. Guide children to use different strategies. Ask, 'Which strategy was the most useful?' Discuss responses. Have children work independently to record their strategies. More advanced children could write these as addition sentences.

## **Independent Maths** (Individual, pair, small group)

### **Making 100-dot pictures**

Have children make their own 100-dot pictures on an enlarged copy of BLM 70 'Grid Paper'. They could use sticky dots. Encourage partners to count each other's dots to ensure that there are 100 dots in each picture.

### **Counting Groups (Student Book p. 5)**

Have children complete the Student Book page.

### **Find 500**

Have children play the game 'Find 500' in pairs. Let each pair decide whether to start at 400 or 600. In turn, each child throws a dice marked 'count on' and 'count back'. (This can be made using BLM 66 'Cube Nets'.) The child then counts, for example, on five numbers or back five numbers from the starting number, e.g. 600, 599, 598, 597, 596. The next player continues counting on or back from the number on which the last player finished. The winner is the first player to say the target number.

*The game can be varied by changing the starting number, e.g. more able children might start at 900 or 1100 and try to reach 1 000, while less able children might work with numbers below 100.*

## Number Lines (Student Book p. 6)

Have children complete the Student Book page.

**L2321 'Number trains: numbers 90–120':** Have children work independently on computers to order train carriages by working out the number that comes before and after the numbers on the carriage.

### Racing-car Game

Play in pairs using counters and number lines made from BLM 53. Each player chooses a starting number, writes it at the beginning of their number line and places a 'racing car' (counter) alongside it. In turn, each child throws a dice and moves their counter the corresponding number of places. The move may only be completed if the player is able to name the number on which they landed. The winner is the first child to reach the end of the number line.

## Dot-to-dots


Have children make their own dot-to-dots for a friend to complete. (Alternatively, they could complete BLM 2 'Dot-to-dot'.)


### Computer Dot-to-dots


Children might also like to try creating dot-to-dots using *Kid Pix Studio Deluxe*. These can be printed out and turned into a class book of dot-to-dots. To make them reusable, laminate or place them into plastic pockets and supply whiteboard markers for completing the dot-to-dots.





## REFLECTION

 Have individuals share their 100-dot pictures with the class. Ask, 'What did you think about when you were counting the dots? How can you be sure that you have exactly 100 dots?' Encourage discussion about various counting strategies.

 Ask, 'How did you know you had 12 stars, 34 moons,' etc. Have children share their strategies for counting the stars and smiley faces. Talk about the advantages and disadvantages of each.

 Choose several children to demonstrate counting on and counting back from a given number. Talk about the thinking processes required.

 Select children to share their completed number lines. Choose several players of the Racing-car Game to explain how they worked out what number they would land on.

 Choose several children to share their dot-to-dot pictures. Ask, 'What difficulties did you have to overcome to make these pictures? What would you do differently next time? What counting skills did you use?'



## ASSESSMENT

- See Assessment Task Card 3.1.
- For more in-depth assessment tasks see *NAK Teacher's Guide 3rd Year of School*, Number & Patterns: Sections A1 to A5, pp. 7–9.

### Recommendations for Future Learning

If the child has not yet achieved the recommended skills:

- review *Nelson Maths for WA Year 2* Unit 11, pp. 54–56
- continue to practise ordering numbers using L2321 'Number trains: numbers 90–120'.

If the child has achieved the recommended skills and these skills are firmly established, consider:

- moving forward to *Nelson Maths for WA Year 3* Unit 2, pp. 27–29
- extending the activities in this unit by using larger numbers.

See the *Scope and Sequence Across the Year Levels* (pp. 20–22) for a complete listing of ALL units in this Strand.

Assessment information can be recorded into the electronic Planning and Assessment Tool.

# Skip-counting

**During this unit look for children who can:**

- skip-count by 2s, 5s and 10s to 100 and beyond
- count by ones and 10s from different starting points
- identify number patterns to 100.

When planning this week's work choose activities from 'Whole Class Focus', 'Independent Maths' and 'Reflection', e.g. if the ☀️ activity is selected in the 'Whole Class Focus', then the 🌙 activity should be selected in the 'Independent Maths' and 'Reflection'.

**Resources**

**Student Book** pp. 7–8; **BLMs** 3, 47, 48, 49, 50, 51 & 52; **NTO 2 'Calculator'**; **L2322 'Number trains: skip counting'** calculators, Unifix, *Kid Pix Studio Deluxe*, number cards to 100 (BLMs 47–50), BLM 51 '100 Grid', BLM 3 'Missing Numbers Grid', BLM 52 'Blank 100 Grid'

**Maths Talk**

Model the following vocabulary in discussion throughout the week: skip-counting, starting number, counting by 2s, counting by 5s, counting by 10s, number before, number after



## WHOLE CLASS FOCUS: Introducing the Concept

**Find the Pattern**

Show children a copy of the 100 grid (BLM 51). Ask, 'What pattern do you think we would have if we coloured in every second number? Where would we start colouring?' Allow time for children to discuss their answers and to give reasons to support them. Have several children colour in the first two or three lines of the number pattern. Discuss the pattern that starts to emerge. Ask children to predict which numbers will be coloured in next. Ask them to predict which numbers in the fifth line will be coloured in. Show the children another 100 grid. Ask, 'What pattern do you think we would find if we coloured in every fifth number?'

**Which Numbers Are Missing?**

Revise skip-counting by 2s, 5s and 10s. Show children BLM 3 'Missing Numbers Grid'. Ask, 'Which numbers are missing from the grid? What do you need to think about to work out the answer?' Ask children to supply the missing numbers.

**Counting Hands**

Have children stand in a circle with their hands held up in front of them. Ask, 'How many children will we have to count to count 20 hands?' Allow time for children to predict the answer and then check their predictions by counting by 2s. Ask, 'How many children will we have to count to see 30 hands?' Repeat several times with different numbers. Ask how counting by 2s helps us to find out about numbers. Show children how to use the constant function on a calculator. *Note: NTO 2 'Calculator'* could be used. Punch in the number 5. Ask, 'How many times will I push the '+' sign to count to 30.'

**Target Number**

Show children a number that is a multiple of five. This is the target number. Have children stand in a circle and predict who will be the person to say the target number if they count by 5s around the circle. Have children count by 5s until the number is reached. Ask, 'What did you need to think about to predict who would say the target number?' Discuss responses. Repeat with a different target number. Repeat, counting by different numbers, e.g. 2s or 10s.

## Skip-counting Patterns

Give children number cards between 0 and 100 (BLMs 47–50). Ask them to get into groups of five to display skip-counting patterns, e.g. children with the cards 24, 26, 28, 30, 32, or 35, 40, 45, 50, 55 might form groups. Ask each group to share its skip-counting pattern. Ask, 'Which skip-counting patterns have numbers that end in 5? Which skip-counting patterns have numbers that end in 2? Which numbers are in all of the 2, 5, and 10 counting patterns?' Talk about counting patterns and the patterns found in the final digits of the number sequences.



## Unifix Patterns

Show children a pattern made with Unifix that models skip-counting by 2s. Ask, 'How many blocks have I used to make this pattern?' Have children count and record. Ask, 'What is a quicker way to find out how many blocks I have used?' Count the pattern by 2s. Discuss the usefulness of skip-counting to save time. Give children some Unifix. Ask them to make a skip-counting pattern using these blocks. Ask, 'How can you quickly count how many blocks you have used?' Allow time for several children to demonstrate their counting techniques.



# SMALL GROUP FOCUS: Applying the Concept

## Focus Teaching Group

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### Counting by 5s

Ask, 'How many fingers (including thumbs) will we have on four hands? How can we work it out?' Guide children to count by 5s. Review counting to 100 by 5s. Ask, 'If we have eight children, how many fingers will we have altogether?' Guide children to solve the problem by counting by 5s. Have them work independently to draw pictures of groups of children and to write number stories to show how many fingers there are in the picture. Encourage them to use counting by 5s in their solutions. More advanced children could explore counting by 5s from different starting points.

### Counting by 10s

Have children take off their shoes and socks. Ask, 'How many toes do we have altogether? How could we work it out?' Encourage children to count the toes by 10s. Have children work independently to make footprints by drawing around their feet on coloured paper, cutting out the feet and sticking them on a poster. These footprints could then be used to create counting-by-10 charts. More advanced children could explore counting by 10s from different starting points.

### Counting by Odd Numbers

Review counting by 2s. Ask, 'What would happen if we started at one and counted by 2s?' Have each child look at a 100 grid (BLM 51) to predict the outcome, then work independently to colour the pattern made. Ask, 'What do you know about the numbers you have coloured?'

## Independent Maths (Individual, pair, small group)

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### Counting Patterns

Have children use a number of copies of the 100 grid (BLM 51) to discover the patterns made by colouring in numbers in different counting sequences.

**L2322 'Number trains: Skip counting':** Have children work independently on computers to skip count by 2s, 5s and 10s using L2322 'Number trains: Skip counting'.



### Missing Numbers (Student Book p. 7)

Have children complete the Student Book page. Children could then devise their own missing-number pattern on a blank 100 grid (BLM 52). Partners could fill in the missing numbers.



### Constant Counting

Play 'Constant Counting' in pairs. Each pair needs a calculator. The first player keys in a starting number and shows this to their partner, then nominates the number they will count by. In turn, players push this number and then the '+' sign a number of times. Their partner counts how many times the '+' sign is pushed and tries to predict what the

number on the calculator will be. If the partner predicts the correct number they gain one point. The winner is the one with the most points after a specified period of time or ten/twenty turns each.

### **Making 24**

Give each child a calculator. Ask them to work out how many different ways they can use the constant addition function to count to 24. Have children record this in various ways. Children could also investigate using the calculator constant addition function to count to, say, 48 or 100 by different numbers.

### **Skip-counting Frog (Student Book p. 8)**







Have children complete the skip-counting activity on the Student Book page. Children could then create their own lily-pad skip-counting problem for other children to complete.

### **Skip-counting Stamps**

Have children work in cooperative pairs to make and continue skip-counting patterns using stamps from *Kid Pix Studio Deluxe*. One child makes the pattern; the other child uses skip-counting strategies to count how many objects are in the pattern, e.g. hands on people stamps, ants on ant stamps, etc. Alternatively children could make and record skip-counting patterns using concrete materials. They could write down the strategies they used to count the items that make up the pattern.



## **REFLECTION**

-  Have children consider the patterns they have discovered on a 100 grid. Ask, 'What pattern do you see when you count by 2s? What pattern do you see when you count by 5s?'
-  Choose several children to share their missing-number patterns. Ask, 'What did you think about when choosing which numbers to leave out?'
-  Talk with children about counting by 2s and how it can be helpful in everyday life.
-  Promote discussion about the ways in which children solved their counting problems.
-  Choose several children to share their lily-pad problems. Have them talk about the thought processes they employed when numbering the different lily pads.
-  Ask a range of children to share the patterns they have made. Ask, 'What did you think about to make sure your pattern worked?' Promote discussion about which elements of each pattern could be counted using skip-counting strategies.



## **ASSESSMENT**

- See Assessment Task Card 3.2.
- For more in-depth assessment tasks see *NAK Teacher's Guide 3rd Year of School*, Number & Patterns: Section C1, p. 11.

### **Recommendations for Future Learning**

If the child has not yet achieved the recommended skills:

- review *Nelson Maths for WA Year 3* Unit 1, pp. 24–26.

If the child has achieved the recommended skills and these skills are firmly established, consider:

- moving forward to *Nelson Maths for WA Year 4* Unit 2, pp. 27–29.

See the *Scope and Sequence Across the Year Levels* (pp. 20–22) for a complete listing of ALL units in this Strand.

Assessment information can be recorded into the electronic Planning and Assessment Tool.