CAMBRIDGE
Primary Mathematics

Learner's Book 2

Cherri Moseley & Janet Rees

Introduction

Welcome to Stage 2 of **Cambridge Primary Mathematics**. We hope this book will show you how interesting and exciting mathematics can be.

Mathematics is everywhere. Everyone uses mathematics every day. Where have you noticed mathematics?

Have you ever wondered about any of these questions?

- Counting lots of things one by one is slow and it's easy to make a mistake. Is there a better way?
- What makes a number odd or even?
- What are centimetres, metres, grams, kilograms, millilitres and litres?
- What is it that repeats in a repeating pattern?
- How do you use a calendar?
- How can I explain to someone how to get to my house?
- How do you solve a mathematics problem?

You will work like a mathematician to find the answers to some of these questions. It is good to talk about the mathematics as you explore, sharing ideas. You will reflect on what you did and how you did it, and think about whether you would do the same next time.

You will be able to practise new skills and check how you are doing and also challenge yourself to find out more. You will be able to make connections between what seem to be different areas of mathematics.

We hope you enjoy thinking and working like a mathematician.

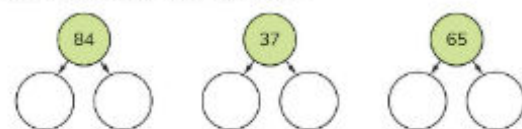*Cherri Moseley and Janet Rees*

Contents

How to use this book

In this book you will find lots of different features to help your learning.

Questions to find out what you know already.

Getting started

1 Split each number into tens and ones.

84   37   65

What you will learn in the unit.

We are going to ...

- say, read and write numbers from 0 to 100
- know the value of each digit in a 2-digit number
- count on and back in steps of 1 and 10 from any number.

Important words that you will use.

column   digit   place holder
representation   row

Step-by-step examples showing a way to solve a problem.

Worked example 3

A number sequence starts at 58.
It counts back in twos and stops at 50.
What are the numbers in this sequence?

All the numbers have 5 tens and they are even.

Answer: 58, 56, 54, 52, 50.

There are often many different ways to solve a problem.

These questions will help you to develop your skills of thinking and working mathematically.

6 Compare 75 and 57.
Which is the greater number?
Use a place value chart or a number line to help you.

0 10 20 30 40 50 60 70 80 90 100

An investigation to carry out with a partner or in groups. This will help develop your skills of thinking and working mathematically.

Let's investigate

Zara draws this shape on the 100 square. She says she always has 2 or 3 odd numbers in her shape.
Is Zara correct?
Convince your partner that you are correct.
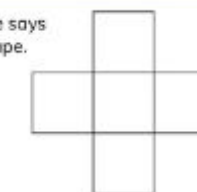
Questions to help you think about how you learn.

Compare with a partner how you each worked out the missing numbers in question 6.
What did you do the same?
What did you do differently?

What you have learned in the unit. Tick the column to show how you feel about each thing.

Look what I can do!

- I can represent 2-digit numbers in tens and ones.
- I can estimate how many there are then count to check.
- I can count on and back in ones, twos and tens.

Questions that cover what you have learned in the unit.

Check your progress

1 Find the missing totals.

a	42	b	78	c	64
	+ 5		+ 10		+ 30

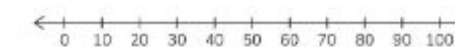| d	48	e	69	f	77
	- 20		- 10		- 6

At the end of several units, there is a project for you to carry out using what you have learned. You might make something or solve a problem.

Project 4

Time a task

For this activity you will need to work in pairs.
One of you will use a timer that shows seconds, and the other will choose one of the following tasks:

a Counting to 20
b Drawing a simple stick man
c Standing on one foot for as long as possible
d Saying a nursery rhyme
e Walking slowly round the room

Projects and their accompanying teacher guidance have been written by the NRICH Team. NRICH is an innovative collaboration between the Faculties of Mathematics and Education at the University of Cambridge, which focuses on problem solving and on creating opportunities for students to learn mathematics through exploration and discussion. https://nrich.maths.org

Thinking and Working Mathematically

There are some important skills that you will develop as you learn mathematics.

Specialising is when I test examples to see if they fit a rule or pattern.

Characterising is when I explain how a group of things are the same.

Generalising is when I can explain and use a rule or pattern to find more examples.

Classifying is when I put things into groups and can say what rule I have used.

Critiquing is when I think about what is good and what could be better in my work or someone else's work.

Improving is when I try to make my maths better.

Conjecturing is when I think of an idea or question linked to my maths.

Convincing is when I explain my thinking to someone else, to help them understand.

1 Numbers to 100

Getting started

1 Add some facts about number fourteen.

11 + 3

fourteen
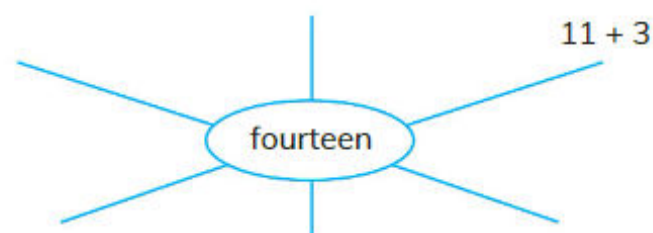
2 Sort the numbers from 0 to 20 in the Venn diagram.

even numbers
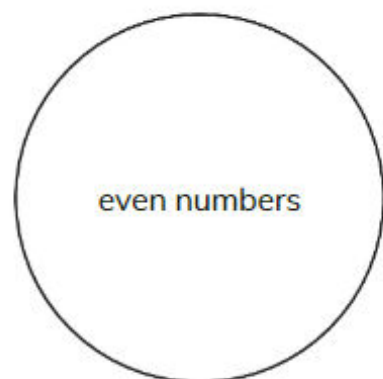
3 Show 18 on this number line.

0   10   20

68, 69, 70, 71. I've got 71 stickers!

47

64 exciting pages

'Island Adventure'
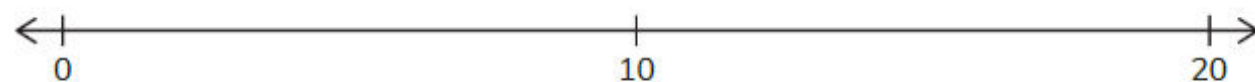
In this unit you will explore numbers to 100.

You might live at number 47, read a book with 64 pages in it and have collected 71 stickers.

You use numbers every day, in many different ways.

› 1.1 Numbers to 100

We are going to ...

- say, read and write numbers from 0 to 100
- know the value of each digit in a 2-digit number
- count on and back in steps of 1 and 10 from any number.

There are many patterns to discover in the numbers to 100. You will find out how many tens and how many ones there are in each number to help you to understand the order of the numbers.

column   digit   place holder
representation   row

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

24
20   4
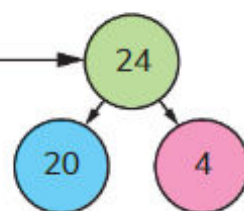
Exercise 1.1

1   Write the missing numbers.

| 2 | 6 | | = | | 0 | | + | | |

| | | | = | 5 | 0 | | + | 8 | |

| | | | = | 8 | 0 | | + | 4 | |

Worked example 1

This is a row from the 100 square.

| 21 | | | | 25 | | | | | 30 |

Write the missing numbers.

Count on in ones.
21, 22, 23, 24, 25.

Count on in ones.
25, 26, 27, 28, 29, 30.

Answer:

| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |

The ones change when I count. There are always two tens until I count to 30.

2 Write the missing numbers.

31				35					40

61	62			65					

				95					100

Worked example 2

This is a column from the 100 square.

Write the missing numbers.

Count on in tens. 2, 12, 22, 32, 42, 52, 62, 72, 82, 92. The tens change when I count. The number of ones stays the same.

2
12
92

Answer:

2
12
22
32
42
52
62
72
82
92

3 Write the missing numbers.

5
55

7
57

10
100

◄ **Let's investigate**

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

How is every row in the 100 square the same?
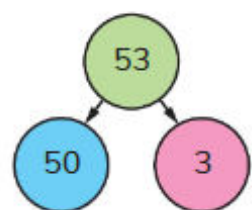
How is every row different?

Talk about what you notice with your partner or in a small group.
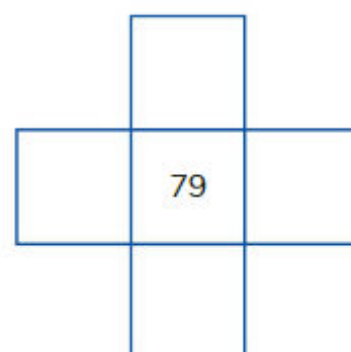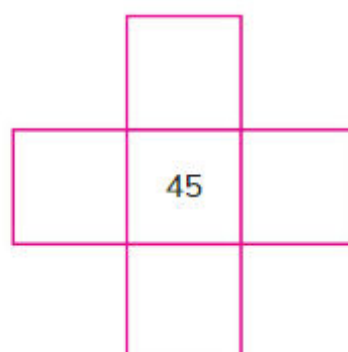
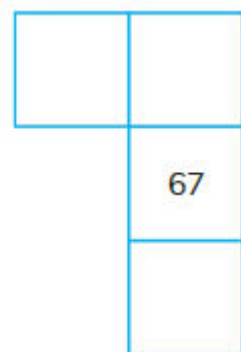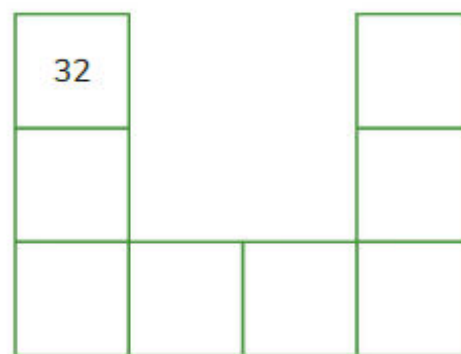4 Which 2-digit numbers are represented below?

a

b

c
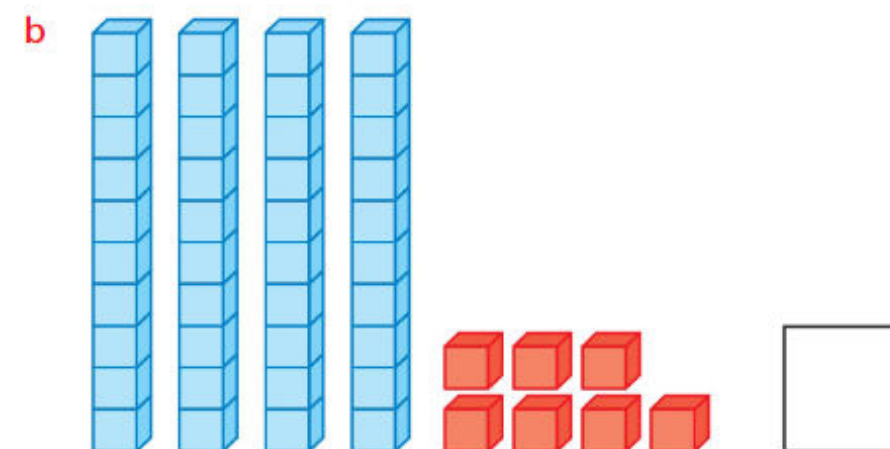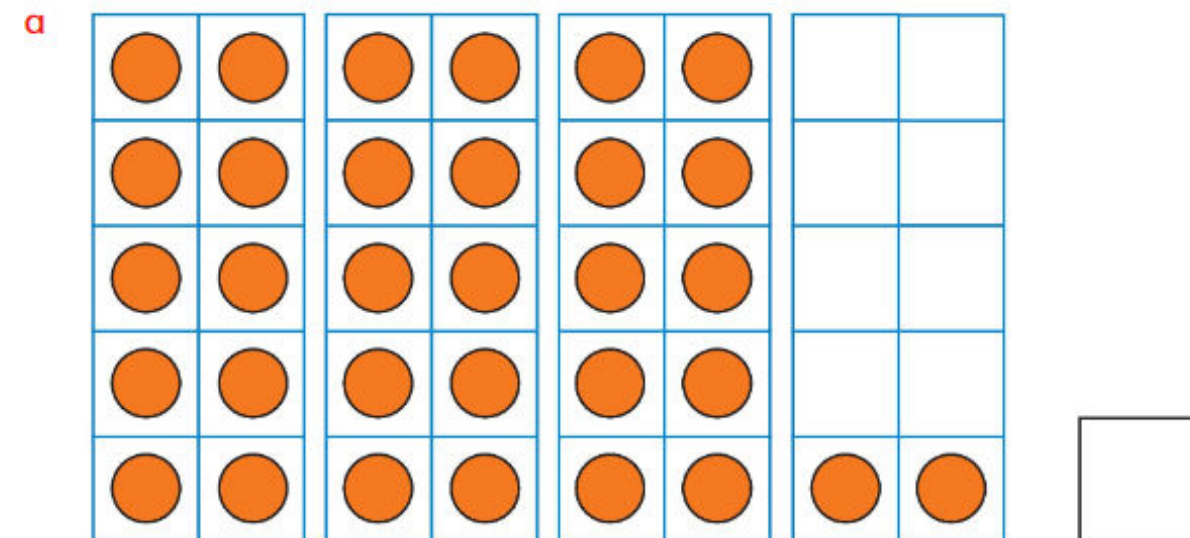
5 Draw a different representation of the number shown.

53
50 3

Compare your representation with your partner's.

How are they the same? How are they different?

6 Here are some pieces of a 100 square. Write the missing numbers.

| 4 |
| | |

| 8 | | |
| | | |

32	

| | |
| 67 | |

| |
| 45 |
| |

| |
| 79 |
| |

Compare with a partner how you each worked out the missing numbers in question 6.

What did you do the same?

What did you do differently?

Look what I can do!

- I can say, read and write numbers from 0 to 100.
- I can say and represent the value of each digit in a 2-digit number.
- I can count on and back in steps of 1 and 10 from any number, using the 100 square for support.

> 1.2 Counting up to 100 objects

We are going to …

- represent 2-digit numbers in tens and ones
- estimate how many objects there are then count to check
- count on and back in ones, twos and tens.

Now that you know the order of the numbers to 100, you can use them to estimate how many objects there are and count them.

Counting in tens helps you to count larger collections quickly and accurately.

accurate, accurately
collection   order