

Contents

| <i>Focus</i> | <i>Activity</i> | <i>Page</i> |
|--|-----------------------|-------------|
| Introduction | | 5 |
| Counting and properties of numbers | 'Strange dice' | 6–7 |
| Place value and addition | 'What number am I?' | 8–9 |
| Place value and addition | 'Number jumper' | 10–11 |
| Addition and subtraction strategies and money | 'Money pyramids' | 12–13 |
| Length | 'Line routes' | 14–15 |
| Shape and space, reasoning about shapes | 'Triangle maker' | 16–17 |
| Reasoning about numbers | 'Odd rules' | 18–19 |
| Addition and subtraction, mental calculation strategies | 'Matching pairs' | 20–21 |
| Multiplication and division, mental calculation strategies | 'Animal friends' | 22–23 |
| Money and real-life problems | 'At the fruit market' | 24–25 |
| Length, making decisions and checking results | 'How many strips' | 26–27 |
| Handling data | 'Roll those dice!' | 28–29 |
| Counting, properties of numbers and number sequences | 'Number sequences' | 30–31 |
| Place value and ordering | 'Three numbers' | 32–33 |
| Understanding addition and subtraction, mental calculation strategies | 'Who threw that?' | 34–35 |
| Money, making decisions and checking results | 'Money mountain' | 36–37 |
| Mass | 'Balancing shapes' | 38–39 |
| Shape and space | 'Mirror pictures' | 40–41 |
| Counting and properties of numbers, reasoning about numbers | 'Reverse the odds' | 42–43 |
| Addition and subtraction, place value, mental calculation | 'Missing symbols' | 44–45 |
| Multiplication and division and real-life problems | 'Cars and motorbikes' | 46–47 |
| Time | 'What time is it?' | 48–49 |
| Problems involving measures | 'The lolly shop' | 50–51 |
| Counting and properties of numbers | 'Multiple winners' | 52–53 |
| Place value, estimating and rounding | 'Halfway' | 54–55 |
| Understanding subtraction, mental calculation strategies | 'Takeaways' | 56–57 |
| Money and real-life problems, making decisions and checking results | 'Coin throws' | 58–59 |
| Shape and space | 'Making deliveries' | 60–61 |
| Shape and space, reasoning about shapes | 'Colouring in' | 62–63 |
| Counting and properties of numbers, reasoning about numbers | 'Addition triangles' | 64–65 |
| Mental calculation strategies and money problems | 'Which coins?' | 66–67 |
| Understanding multiplication and division, mental calculation strategies | 'Missing symbols' | 68–69 |
| Understanding multiplication and division, mental calculation strategies | 'Odds and evens' | 70–71 |
| Time | 'Saturday' | 72–73 |
| Capacity | 'Party drinks' | 74–75 |

Introduction

This series of six photocopiable books provides additional challenges for more able children. The materials enable you to meet the needs of able mathematicians without developing completely separate topics.

Book 2 will provide challenges for children in Years 2–4.

You can use this book to:

- **provide alternative and more demanding tasks for more able children during the daily maths lesson;**
- **provide more challenging homework tasks for the more able mathematicians in your class;**
- **broaden the range of mathematical experience for a range of children.**

Many of the tasks in this book are of an investigative or puzzle-solving variety. In addition to mathematical knowledge, some logical thinking will often be required. The children should enjoy the level of challenge the activities provide, and also the opportunity to choose their own ways of working. This is fundamental to development in mathematics, and you should therefore allow children to decide what aids they will use to help them solve the problems. More able children are often comfortable with abstract tasks, but most of them will at some stage want to use practical apparatus, and this should be allowed.

The activity sheets

Photocopiable activity sheets for the children to work on are provided for the lessons and can be used to support group work. It is assumed that all the children will take part in the whole-class introduction to the lesson before tackling the task from this book.

The teacher notes will guide you in introducing the tasks to the children and in effective ways of working, as well as providing the solutions. These notes will help you to support children appropriately as they work.

Counting and properties of numbers

Learning objectives

- ◆ Count in steps of 2, 4 and 5.
- ◆ Begin to recognise familiar multiples.

Resources

'Strange dice'
Counters

Teacher's notes

In this activity children move round a track which has 60 spaces from start to finish. Children are not told that there are 60 spaces. The first square after the start counts as one. Ensure that the children understand this, and that they don't count the start square.

In the first part children work out multiples of four and count up. After three throws they have to calculate how many fours are needed to land exactly on the finish square.

The first throw is $4 \times 4 = 16$; the second throw is $2 \times 4 = 8$; the third throw is $3 \times 4 = 12$.
The total number of squares moved = $16 + 8 + 12 = 36$.

There are 24 spaces to reach the finish. This requires a throw of **6 fours**.

In the second part children work out multiples of five and count up. After two throws they have to calculate how many fives are needed to land exactly on the finish square.
First throw is 5 fives = 25; The second throw is 2 fives = 10.

The total number of spaces moved = $25 + 10 = 35$. There are 25 spaces to reach the finish.

This requires a throw of **5 fives**.

In the final part children use multiples of two to create their own problem.

Place value and addition

Learning objectives

- ◆ Recognise the relationship between digits in a two-digit number and combine numbers to make a two-digit number.

Resources

'What number am I?'

Teacher's notes

This problem-solving activity is in the form of number stories.

There are four tasks. In each part children must use the clues provided to find the number.

Task one:

From the first clue, the number is one of these: 3 **4** 5 6 7 8 9.

From the second clue, to make 25 from each of the four numbers requires additions: $9 + 16$, $12 + 13$, $21 + \mathbf{4}$, $23 + 2$.

The only number fitting both clues is **4**.

Task two:

From the first clue, the number is one of these: 16 **17** 18 19 20 21 22 23 24.

From the second clue, to make 30 from each of the four numbers requires additions: $4 + 26$, $13 + \mathbf{17}$, $15 + 15$, $17 + 13$.

The only number fitting both clues is **17**.

Task three:

From the first clue, the number is one of these: 23 24 **25** 26 27 28.

From the second clue, a variety of different numbers can be made by adding together pairs of the numbers taken from 6 11 19 24. Only $\mathbf{6} + \mathbf{19} = \mathbf{25}$ gives a sum which matches one of the numbers from the first clue. All of the other additions create sums that are too large or too small.

The number is **25**.

Task four:

From the first clue, the number is one of these: 41 42 43 44 **45** 46 47 48 49.

From the second clue, the only addition which gives one of these numbers is $\mathbf{10} + \mathbf{35} = \mathbf{45}$.

The number is **45**.

Name: _____

Date: _____

What number am I?

- Use the clues to find each number.

I am more than 2 but less than 10.
Add me to one of these numbers to make 25

I am number    

I am more than 15 but less than 25.
Add me to one of these numbers to make 30

I am number    

I am more than 22 but less than 29.
I can be made by adding together two of these numbers

I am number    

I am more than 40 but less than 50.
I can be made by adding together two of these numbers

I am number    

- Make up a number problem of your own. Ask a friend to find the number.

