



DOCTOR CATSON



SHERLOCK BONES



PROFESSOR MORIRATTY



Use my Secret Solver to check that you have the right answer.

BRONZE LEVEL Elementary Addition

Catson and I use addition (+) to calculate a total.

This week, for instance, I have eaten $3 + 2 + 10$ cans of dog food, which makes a whopping 15 cans in total. Solving crimes is hungry work!

Use your awesome addition skills to solve the following puzzles:

SHERLOCK BONES

My name is Sherlock Bones (world-class detective and professional calculation cracker). It is my job to solve conundrums using my superb maths skills and to catch cunning criminals when I can.

Can you help me in my Addition and Subtraction Adventure and track down my evil archenemy, Professor Moriratty, in the process? You will earn medals as you progress, and the puzzles will test different numeracy skills as you work your way through the book. My faithful accomplice, Dr Catson, and I are on board to offer you some helpful hints throughout.

The challenges in this book are organized into the following levels:

- Pages 3-9: **BRONZE**
Elementary Addition | Simple Subtraction | Nifty Number Bonds
- Pages 10-17: **SILVER**
Crazy Column Puzzles | Formidable Fractions | Money Magic
- Pages 18-25: **GOLD**
Subtle Number Sequences | Nippy Negative Numbers | Devilish Decimals
- Pages 26-31: **PLATINUM**
Different Denominators | Awesome Algebra | Radical Roman Numerals
- Page 32: **MIXED MADNESS**

You can use a piece of paper to jot down your workings.

PUZZLE 1

Catson is about to promote some of the cadet cats and dogs. She needs to count how many police badges are in the stock room. Can you help her calculate the total?



PUZZLE 2

OH NO! There has been a robbery at Mrs Moo's shop. Can you **add up** the cost of the stolen items to calculate the **total**?



The **total** cost of the stolen items is £



PUZZLE 3

Is the statement below **TRUE** or **FALSE**?

Adding together two odd numbers **ALWAYS** creates an **even** number.

The answer is

If you get stuck adding more than two numbers together, try and break the sum into sections, like so:

$$3 + 7 + 11 = ?$$

$$3 + 7 = 10$$

$$\text{and } 10 + 11 = 21$$

PUZZLE 4

Catson has been dusting for prints at the crime scene. She's been using different colours (blue, green, red and yellow) for different animals. How many paw prints did she find altogether?

How many **blue** prints are there?

How many **green** prints are there?

Add the **blue** and **green** prints together. What is the **total**?

How many **red** prints are there?

How many **yellow** prints are there?

Add the **red** and **yellow** prints together. What is the **total**?

QUICKFIRE QUIZ

$5 + 2 =$ <input type="text"/>	$7 + 6 =$ <input type="text"/>	$9 + 3 =$ <input type="text"/>
$6 + 5 =$ <input type="text"/>	$8 + 4 =$ <input type="text"/>	$6 + 4 =$ <input type="text"/>
$12 + 9 =$ <input type="text"/>	$21 + 10 =$ <input type="text"/>	$17 + 4 =$ <input type="text"/>
$13 + 5 =$ <input type="text"/>	$36 + 11 =$ <input type="text"/>	$43 + 10 =$ <input type="text"/>

Simple Subtraction

Catson and I use **subtraction** (□) to take away from a number. On Monday, for example, Dr Catson bought 4 cans of cat food and she ate 3 of them. We can, therefore, work out that Catson only has 1 can left:



Use your superb subtraction skills to solve the following puzzles:

PUZZLE 5

Catson and I have followed some of Moriratty's gang into the sewers, but several of the rungs on the ladders are missing. Can you use your super subtraction skills to help us get to the bottom of each ladder safely?

LADDER 1
Should have 10 rungs

LADDER 2
Should have 15 rungs

LADDER 3
Should have 20 rungs

3 rungs missing

7 rungs missing

6 rungs missing

This puzzle can be written as $10 - 3 = ?$

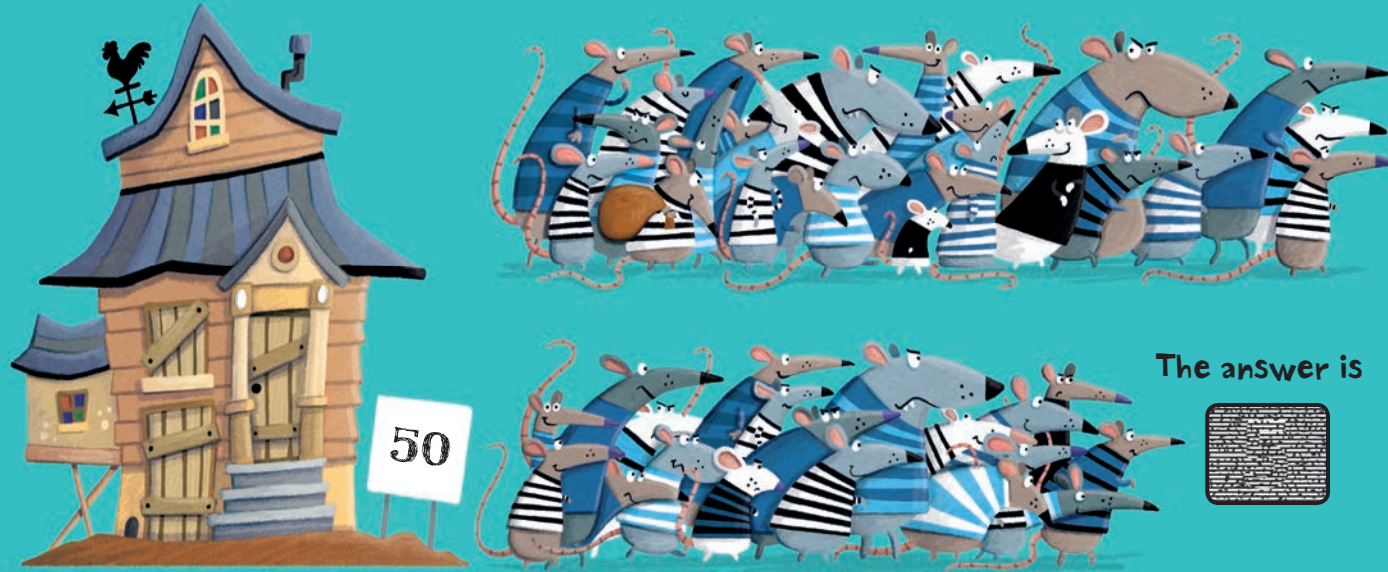
How many rungs are left on the ladder?

How many rungs are left on the ladder?

How many rungs are left on the ladder?

PUZZLE 6

Success! We've found one of Moriratty's safe houses. Catson has been watching the property for some time. She saw **50** rats enter the house. After that, **26** left, followed by a further **19**. How many rats remain in the house?



PUZZLE 7

Pablo Pollock had two paintings in his gallery. The pictures were collectively worth **£50** in total. One of the paintings was stolen by a mystery thief. The stolen painting was worth **£13**. What is the value of the remaining painting?



The answer is

£



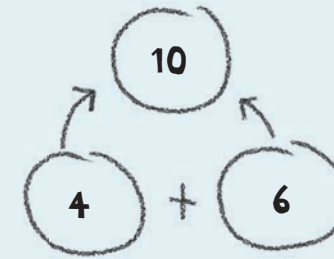
QUICKFIRE QUIZ

$9 - 5 =$	<input type="text"/>	$12 - 7 =$	<input type="text"/>	$15 - 13 =$	<input type="text"/>
$17 - 7 =$	<input type="text"/>	$18 - 5 =$	<input type="text"/>	$28 - 6 =$	<input type="text"/>
$33 - 4 =$	<input type="text"/>	$46 - 8 =$	<input type="text"/>	$58 - 9 =$	<input type="text"/>
$51 - 10 =$	<input type="text"/>	$65 - 30 =$	<input type="text"/>	$83 - 21 =$	<input type="text"/>

Nifty Number Bonds

This is a **number bond**.

It shows the relationship between numbers when you add or subtract from them.



By looking at this number bond, you can determine the following:

That ... $4 + 6 = 10$

That ... $10 - 6 = 4$

That ... $10 - 4 = 6$

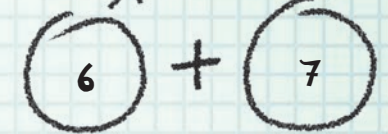
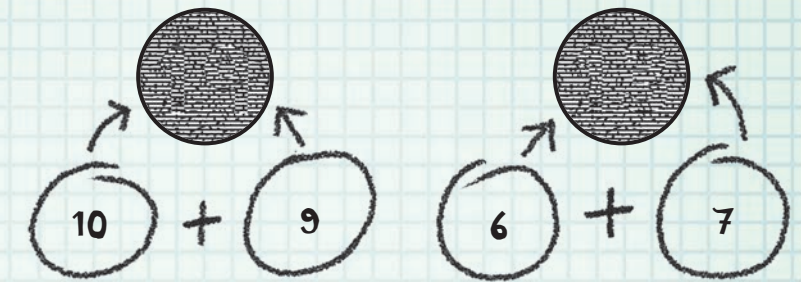
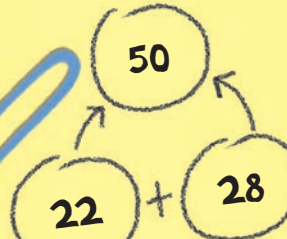
In order to be a world-class detective, your mental agility has to be lightning quick. Use your number knowledge to find the missing numbers in this puzzle section.

PUZZLE 8

Catson and I use number bonds to crack cases. Can you crunch the numbers and find the hidden answers?



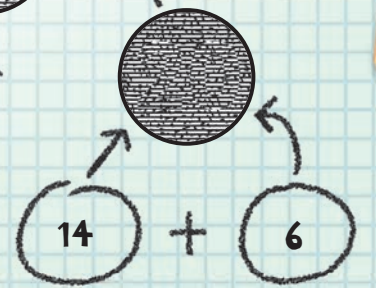
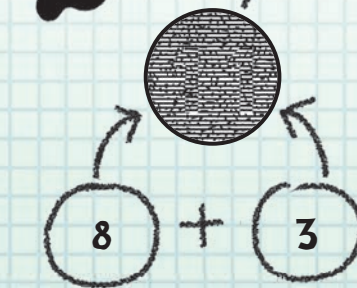
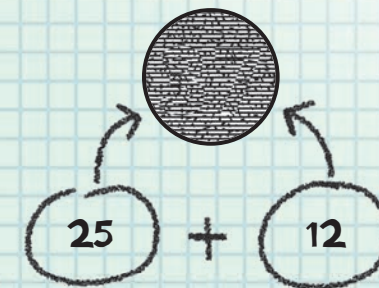
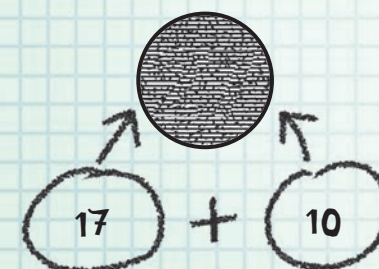
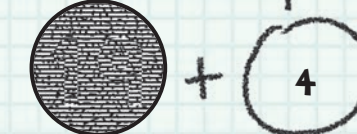
Here's an example of a puzzle that has been completed.



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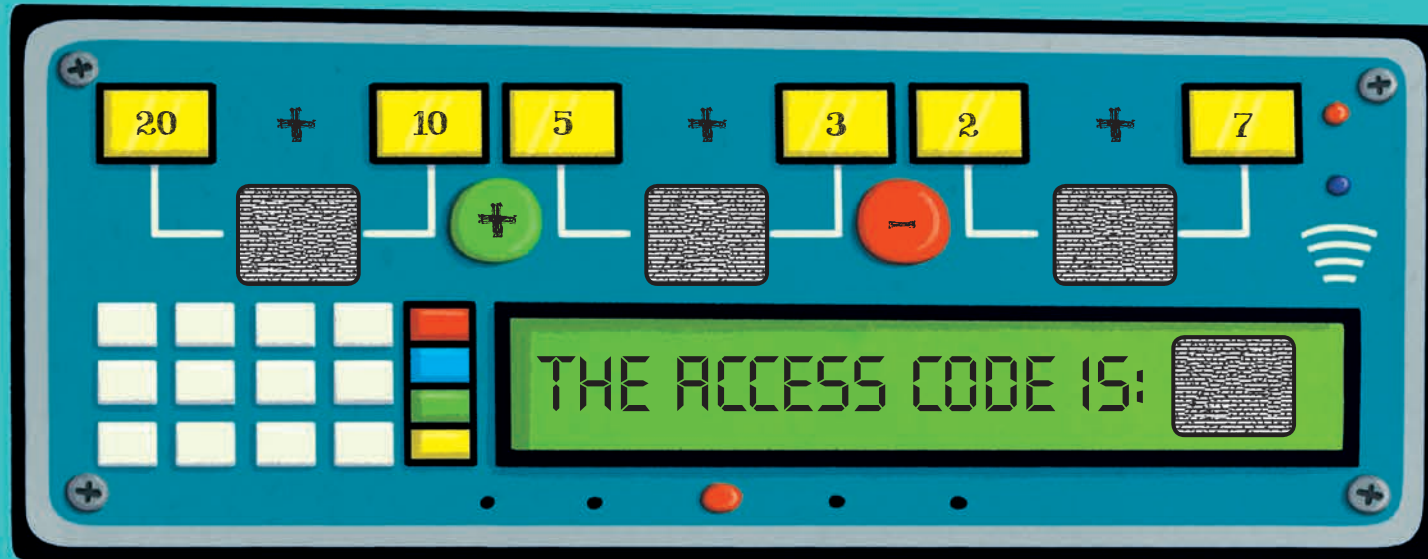


22



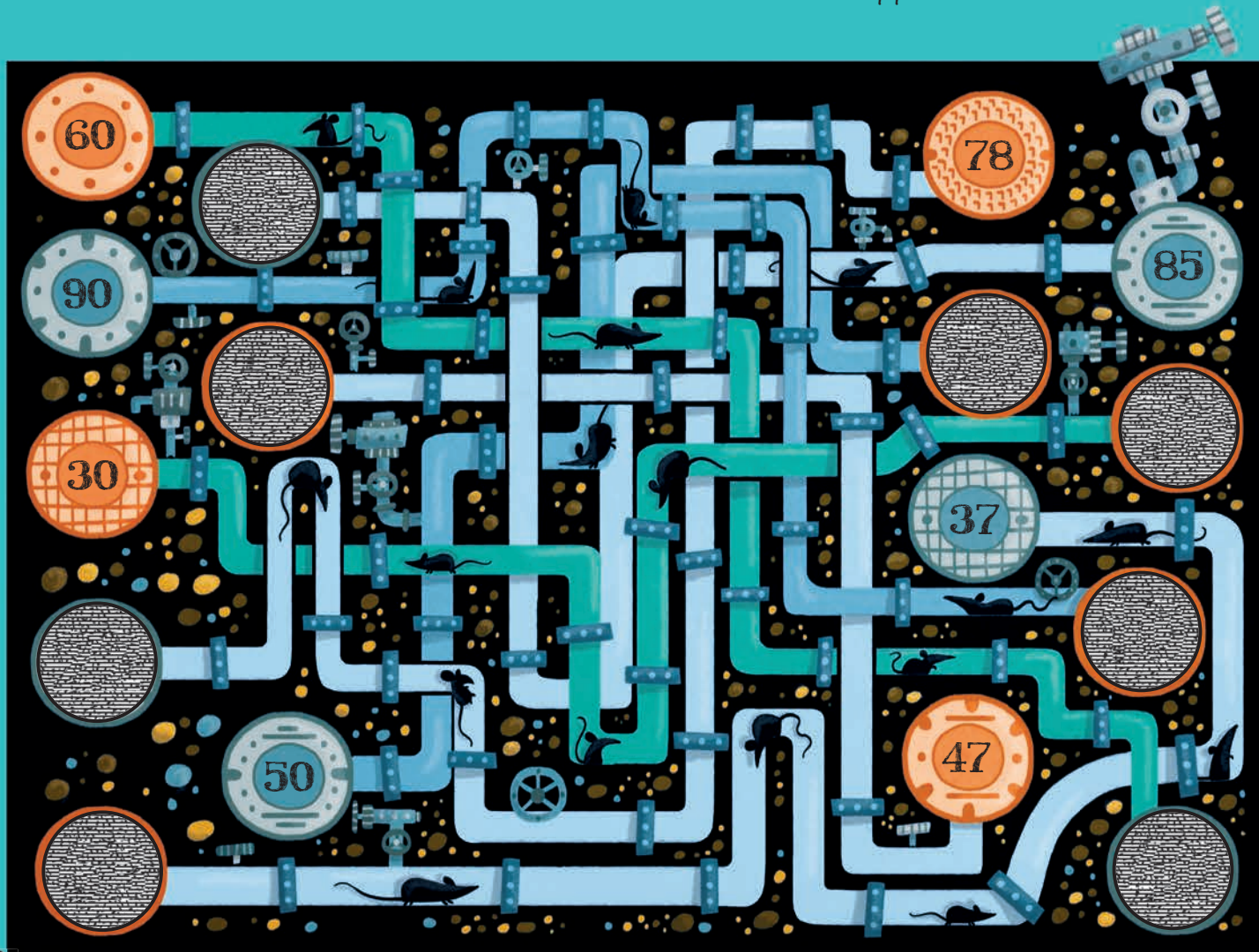
PUZZLE 9

Dr Catson and I think we may have uncovered one of Professor Moriratty's secret hideouts. However, in order to uncover the access code for the door, we need to solve the puzzle. Put your number skills to the test to gain the correct code.



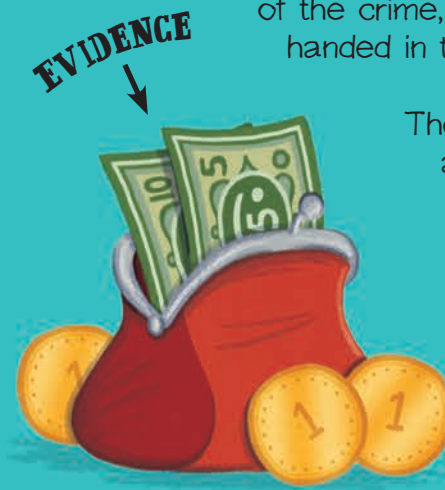
PUZZLE 10

Catson thinks Moriratty's gang has been using a network of sewer systems to commit some of their crimes. She has noticed that they enter and exit using different manhole covers, the sum of which always adds up to 100. If, for example, the gang entered a manhole with the number 20 on it, the other end would have 80 on it. Can you trace the routes of the rats and work out which number should appear on each cover?



PUZZLE 11

A purse was reported stolen a few days ago. Catson and I raced to the scene of the crime, but could not catch the culprit. A few days later, the purse was handed in to the police station by an anonymous mouse. Curious indeed!



The victim said that the purse had £90 in it. Take a look at the evidence and see if you can solve the sums.

How much money is left?



How much was stolen?



MORIRATTY MISCHIEF BRONZE

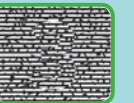
Someone has stolen the Diamond of Digits from the National Museum of Priceless Artefacts. The diamond was on display atop the Pyramid of Peril. We suspect Professor Moriratty may have been up to his dirty tricks again, but we need to scale the pyramid in order to dust for paw prints.

Can you solve the puzzle below to earn your **BRONZE**-level medal?

The blocks work in the same way as number bonds. The numbers in blocks next to one another can be added together to equal the number in the block above them. In the middle of the bottom row, for example, $8 + 6 = 14$



The number in the green brick is



The number in the red brick is



The number in the yellow brick is



To solve the yellow brick, you will have to work out which numbers belong in the two bricks beneath it.



SILVER LEVEL

Crazy Column Puzzles

Column puzzles are useful when you want to add or subtract big numbers. You must start by first solving the **ONES COLUMN** (on the right hand side). Then you can move on to the **TENS COLUMN**.

$$\begin{array}{r} \text{T} \quad 0 \\ 8 \quad 2 \\ + 1 \quad 7 \\ \hline 9 \quad 9 \end{array}$$

If the numbers in the **ONES COLUMN** add up to ten or above, you will need to carry a '1' across to the **TENS COLUMN**. This is called **REGROUPING** as we have **REGROUPED** ten ones into one ten.

Dr Catson has been cracking some addition and subtraction calculations. However, she has since discovered that some of the numbers have vanished. She must have been using the invisible ink by mistake! Can you deduce what numbers are missing in the following problems?

PUZZLE 1: ADDITION

$\begin{array}{r} 3 \blacksquare \\ + 4 \quad 7 \\ \hline 7 \quad 9 \end{array}$	$\begin{array}{r} 6 \quad 5 \\ + 2 \quad 3 \\ \hline 8 \blacksquare \end{array}$	$\begin{array}{r} 5 \quad 7 \\ + 1 \quad 4 \\ \hline 7 \blacksquare \end{array}$
$\begin{array}{r} \blacksquare 6 \\ + 4 \quad 6 \\ \hline 9 \quad 2 \end{array}$	$\begin{array}{r} 5 \quad 2 \\ + \blacksquare 8 \\ \hline 7 \quad 0 \end{array}$	$\begin{array}{r} 7 \quad 1 \\ + 2 \quad 6 \\ \hline \blacksquare 7 \end{array}$

PUZZLE 2: SUBTRACTION

$\begin{array}{r} 8 \blacksquare \\ - 5 \quad 2 \\ \hline 3 \quad 6 \end{array}$	$\begin{array}{r} 5 \quad 9 \\ - 3 \quad 6 \\ \hline \blacksquare 3 \end{array}$
$\begin{array}{r} 4 \quad 2 \\ - 2 \quad 3 \\ \hline \blacksquare 9 \end{array}$	$\begin{array}{r} 6 \quad 5 \\ - 4 \blacksquare \\ \hline 1 \quad 8 \end{array}$

If you cannot subtract the numbers in the **ONES COLUMN** (because the second number is bigger than the first), you'll have to borrow from the digit in the **TENS COLUMN**. Again, this is called **REGROUPING**. This time we are **REGROUPING** one ten into ten ones.

$$\begin{array}{r} \text{T} \quad 0 \\ 2 \quad 3 \\ - 1 \quad 8 \\ \hline 0 \blacksquare \end{array}$$

Now, can you ADD together all of the missing numbers in **PUZZLE 1**?

The **TOTAL** is \blacksquare

Now, can you ADD together all of the missing numbers in **PUZZLE 2**?

The **TOTAL** is \blacksquare

To prove that you are a SILVER-level puzzle solver, can you subtract the **PUZZLE 2** total from the **PUZZLE 1** total?

The **ANSWER** is \blacksquare

JOT DOWN YOUR ANSWERS TO PUZZLES 1 AND 2 ON A SCRAP OF PAPER.

