

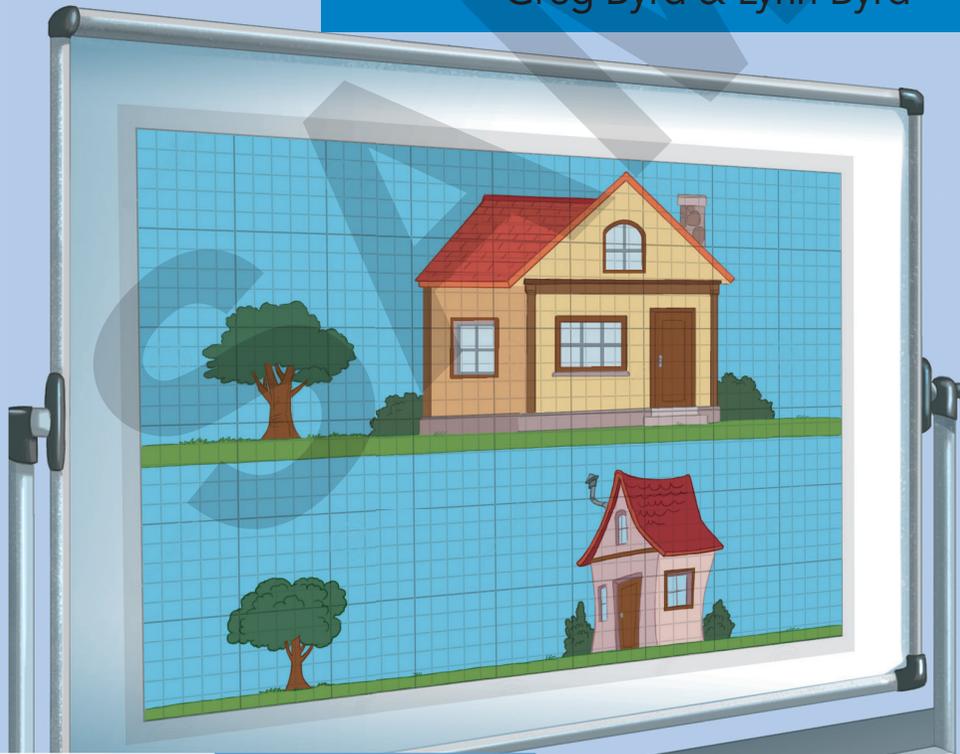


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CAMBRIDGE Primary Mathematics

Workbook 6

Mary Wood, Emma Low,
Greg Byrd & Lynn Byrd



Second edition

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Workbook 6

Mary Wood, Emma Low, Greg Byrd & Lynn Byrd

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University Printing House, Cambridge CB2 8BS, United Kingdom

One Liberty Plaza, 20th Floor, New York, NY 10006, USA

477 Williamstown Road, Port Melbourne, VIC 3207, Australia

314–321, 3rd Floor, Plot 3, Splendor Forum, Jasola District Centre, New Delhi – 110025, India

79 Anson Road, #06–04/06, Singapore 079906

Cambridge University Press is part of the University of Cambridge.

It furthers the University's mission by disseminating knowledge in the pursuit of education, learning and research at the highest international levels of excellence.

www.cambridge.org

Information on this title: www.cambridge.org/9781108746335

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First published 2014

Second edition 2021

20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

Printed in Dubai by Oriental Press.

A catalogue record for this publication is available from the British Library

ISBN 978-1-108-74633-5 Paperback with Digital Access (1 Year)

Additional resources for this publication at www.cambridge.org/9781108746335

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How to use this book



This workbook provides questions for you to practise what you have learned in class. There is a unit to match each unit in your Learner's Book. Each exercise is divided into three parts:

- **Focus:** these questions help you to master the basics
- **Practice:** these questions help you to become more confident in using what you have learned
- **Challenge:** these questions will make you think more deeply.

Each exercise is divided into three parts. You might not need to work on all of them. Your teacher will tell you which parts to do.

You will also find these features:

Important words that you will use. →

bisect	decompose
diagonal	justify
parallel	trapezia

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



There are often many different ways to solve a problem.

Worked example 2

Reflect this triangle in the diagonal mirror line.

Take one vertex of the triangle at a time. Draw arrows (black) to the mirror line, then draw the same length arrows (grey) the other side of the mirror line. Join the vertices with straight lines to complete the reflected triangle.

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

13 Emma uses small cubes to make a larger cube. She uses 16 cubes to make the base of her cube.

How many small cubes does Emma use to make the larger cube?
How do you know?



Thinking and Working Mathematically

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



Specialising is when I give an example of something that fits a rule or pattern.

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

Generalising is when I explain a rule or pattern.

Classifying is when I put things into groups.





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 work better.

Conjecturing is when I think of an idea or a question to develop my understanding.

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



1

The number system

> 1.1 Place value

Worked example 1

Paulo is thinking of a number. He says, 'If I divide my number by 10 and then by 100, the answer is 0.375.'

What number is Paulo thinking of?

compose	decimal point	decompose
digit	hundredths	place value
regroup	tenths	thousandths

$$0.375 \times 100 \times 10$$

100	10	1	0.1	0.01	0.001	
		0	3	7	5	
0	3	7	5			$\times 100$
3	7	5				$\times 10$

$$0.375 \times 100 \times 10 = 375$$

Answer: Paulo is thinking of 375.

To find Paulo's number, reverse the operations.

You could replace $\times 100 \times 10$ by $\times 1000$.

Exercise 1.1

Focus

- 1 Draw a ring around the expression that is equivalent to 0.67.

$$\frac{6}{10} + \frac{7}{10}$$

$$\frac{60}{10} + \frac{7}{100}$$

$$\frac{6}{10} + \frac{7}{100}$$

$$\frac{60}{100} + \frac{70}{100}$$

- 2 What does the digit 5 in 3.065 represent?

- 3 Magda regroupes 56.079 in different ways but two of her answers are wrong. Which answers are wrong?

A: 5607 tenths + 9 thousandths

B: 56 ones and 79 thousandths

C: 56 + 0.79

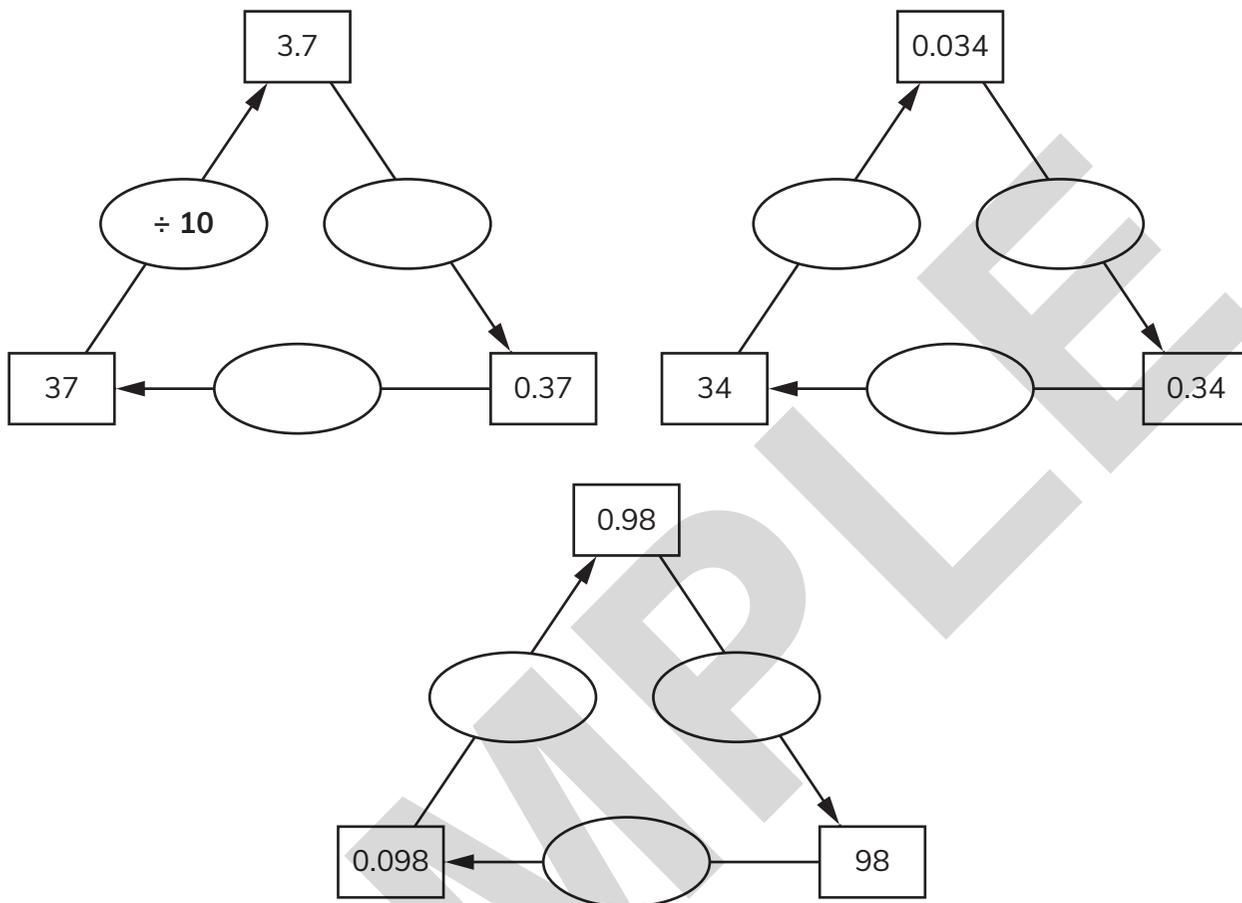
D: 50 + 6.079

E: 50 + 6 + 0.07 + 0.009

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4 Write the operations to complete these multiplication and division loops.



5 Complete the place value diagram.



6 Write the number six tenths, four hundredths and five thousandths as a decimal.

--

Practice

7 Complete the table to show what the digits in the number 47.506 represent.

4	tens
5	
6	
7	

8 Find the missing numbers.

a $5.6 \times 100 =$

b $0.88 \times 1000 =$

c $41.28 \times 10 =$

d $670 \div 1000 =$

e $191 \div 100 =$

f $6.3 \div 10 =$

9 Draw a ring around the expression that is equivalent to 4.063.

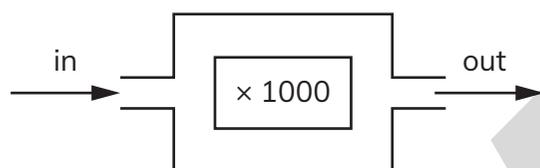
A: $4 + 0.6 + 0.3$

B: $4 + 0.6 + 0.03$

C: $4 + 0.06 + 0.03$

D: $4 + 0.06 + 0.003$

10 Petra puts some numbers into a function machine.



Complete the table to show her results.

in	out
1.5	1500
	937
16.24	
	490
0.07	

11 Write the decimal number that is represented by

$$-4 - 20 - \frac{7}{100} - \frac{6}{1000} - \frac{9}{10}$$

Challenge

- 12 Ingrid says, 'I can multiply by 100 by adding two zeros.'
Explain why Ingrid is wrong.

Blank area for writing the explanation for question 12.

- 13 Filipe multiplies a number by 10, then again by 10 and again by 10.
His answer is 7.

What number did he start with?

- 14 Four students Anton, Ben, Kasinda and Anya each think of a number.
The numbers are 45, 4.5, 0.45 and 0.045.

Use these clues to work out which number each student is thinking of.

- Ben's number is a thousand times smaller than Kasinda's number.
- Anton's number is ten times smaller than Kasinda's number.
- Anya's number is ten times bigger than Ben's number.

Anton's number is Ben's number is

Kasinda's number is Anya's number is

- 15 Leila says, 'The number represented in the place value grid is the largest number that can be made with nine counters.'

Do you agree?

Explain your reasoning.

10s	1s	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$
● ● ● ● ●	●	●	●	●

> 1.2 Rounding decimal numbers

Worked example 2

Neve has four number cards.

0.25	1.25	2.25	3.25
------	------	------	------

She chooses two cards.

She adds the numbers on the cards together.

She rounds the result to the nearest whole number.

Her answer is 4.

Which two cards did she choose?

nearest
round

Continued

1.25 and 2.25

Find two numbers that add to 3.5 as 3.5 rounds to 4

or

0.25 and 3.25

You could choose 1.25 and 2.25 or 0.25 and 3.25

You are **specialising** when you choose two numbers and check if the total rounds to 4.

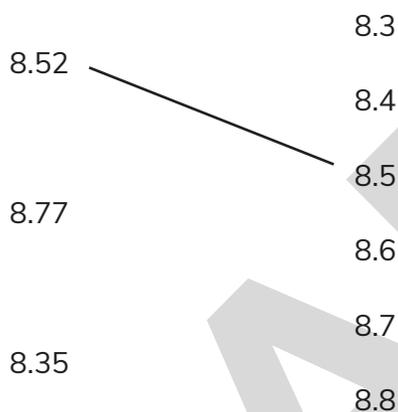
Exercise 1.2

Focus

- 1 Draw lines to show each number rounded to the nearest tenth.

The first one has been done for you.

to the nearest tenth →



- 2 Draw a ring around all the numbers which equal 10 when rounded to the nearest whole number.

10.53	10.5	10.35	9.55
10.05	9.5	9.05	9.35

- 3 a Round 7.81 to the nearest tenth.
-

- b Round 7.81 to the nearest whole number.
-

Tip

Remember the numbers could be less than 10 or more than 10.



4 Complete the table.

Number	Number rounded to the nearest tenth	Number rounded to the nearest whole number
3.78		
4.45		
3.55		
4.04		

Practice

5 Choose the **largest** number from the list that gives 100 when rounded to the nearest whole number.

100.55 99.99 100.9 100.45
 100.5 99.5 99.9

6 Use each of the digits 9, 4, 1 and 2 once to make the decimal number closest to 20.

7 Pedro has four number cards.

0.45	1.45	2.45	3.45
------	------	------	------

He chooses two cards.

He adds the numbers on the cards together.

He rounds the result to the nearest whole number.

His answer is 5.

Which two cards did he choose?

 and

- 8 Huan is thinking of a number. She rounds it to the nearest whole number. She says, 'My number is the largest number with 2 decimal places that rounds to 10.'

What number is Huan thinking of?

Challenge

- 9 Here are eight numbers.

3.36 2.71 4.03 3.34 3.29 3.15 2.93 3.44

Use the clues to identify one of the numbers.

- The number rounds to 3 to the nearest whole number.
- The tenths digit is odd.
- The hundredths digit is even.
- The number rounds to 3.3 to the nearest tenth.

- 10 Write the letters of all the numbers that round to 10.5 to the nearest tenth.

What word is spelt out?

A	B	C	D	E	F	G	H	I
10.81	10.56	10.32	10.65	10.44	10.57	10.44	10.43	19.8

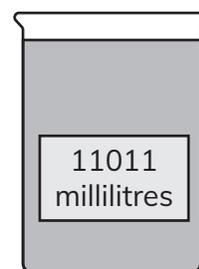
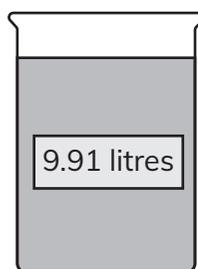
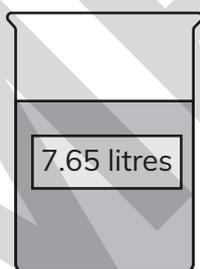
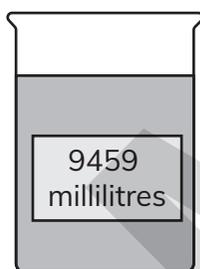
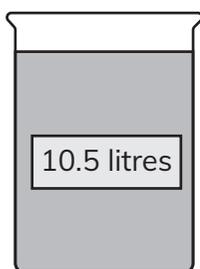
J	K	L	M	N	O	P	Q	R
10.48	10.71	10.51	10.58	10.55	9.24	10.59	10.42	10.57

S	T	U	V	W	X	Y	Z
10.44	10.58	10.54	16.25	10.05	10.35	10.46	10.41

- 11 Stefan says, 'When I round 16.51 and 17.49 to the nearest whole number, the answer is the same. When I round 16.51 and 17.49 to the nearest tenth, the difference between the answers is one.'

Explain why Stefan is correct.

- 12 Draw lines from the containers to the circle that shows each measurement rounded to the nearest litre.

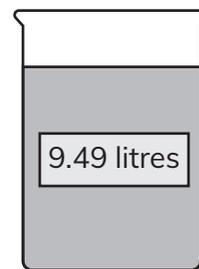
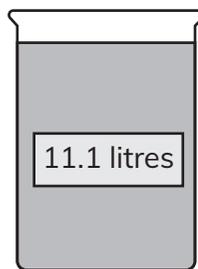
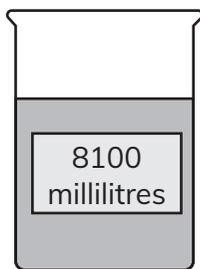
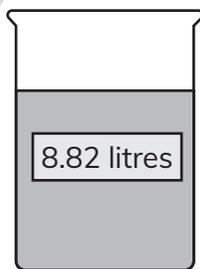
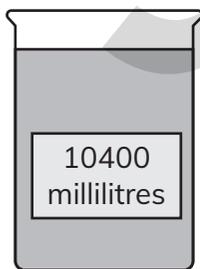


8 litres

9 litres

10 litres

11 litres



2

Numbers and sequences

> 2.1 Counting and sequences

Worked example 1

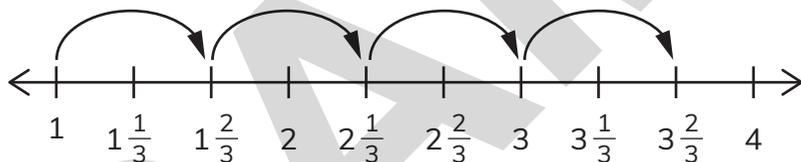
Write a sequence of five terms with steps of constant size that has first term 1 and second term $1\frac{2}{3}$.

position term position-to-term rule
term term-to-term rule

1, $1\frac{2}{3}$, $2\frac{1}{3}$, 3, $3\frac{2}{3}$

The step size is the difference between the 1st and 2nd terms. It is $\frac{2}{3}$.

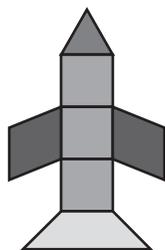
You could use a number line to help you with the count.



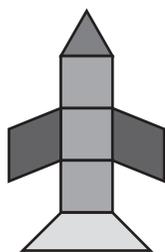
Exercise 2.1

Focus

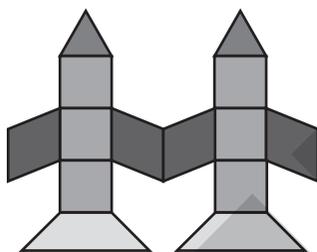
- 1 Here is a rocket made of seven shapes.



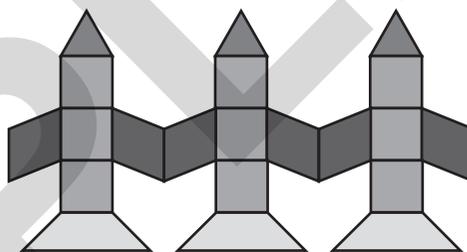
Magda draws a sequence using the rockets.



1



2



3

She records information about the sequence in a table.

Position	1	2	3	
Term (number of shapes)				28

- a Complete the table.
- b What is the term-to-term rule for the sequence?
-
- c What is the position-to-term rule for the sequence?
-
- d What is the 25th term in the sequence?

- 2 Felipe counts up in steps of 0.3 starting at 4.
Write the first five terms of Felipe's sequence.
-

- 3 Write the next two terms in each sequence.

a 1.4, 1.5, 1.6, 1.7, ,

b $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2, $2\frac{1}{2}$, ,

c 0, -0.3, -0.6, -0.9, -1.2, ,

- 4 a Find the position-to-term rule for the numbers in this table.

Position	Term
1	9
2	18
3	27
4	36

- b What is the 10th term of the sequence 9, 18, 27 ...?

- 5 \$1 = 100 cents

- a Complete the table.

\$ (position)	1	2	5	10	100
cents (term)					

- b What is the position-to-term rule for the sequence 100, 200, 300 ...?
-

Practice

6 Given the first term and the term-to-term rule, write down the first six terms of each sequence. Then find the position-to-term rule and the 50th term.

a First term: 9, term-to-term rule: add 9

First six terms: _____

Position-to-term rule: _____

50th term:

b First term: 11, term-to-term rule: add 11

First six terms: _____

Position-to-term rule: _____

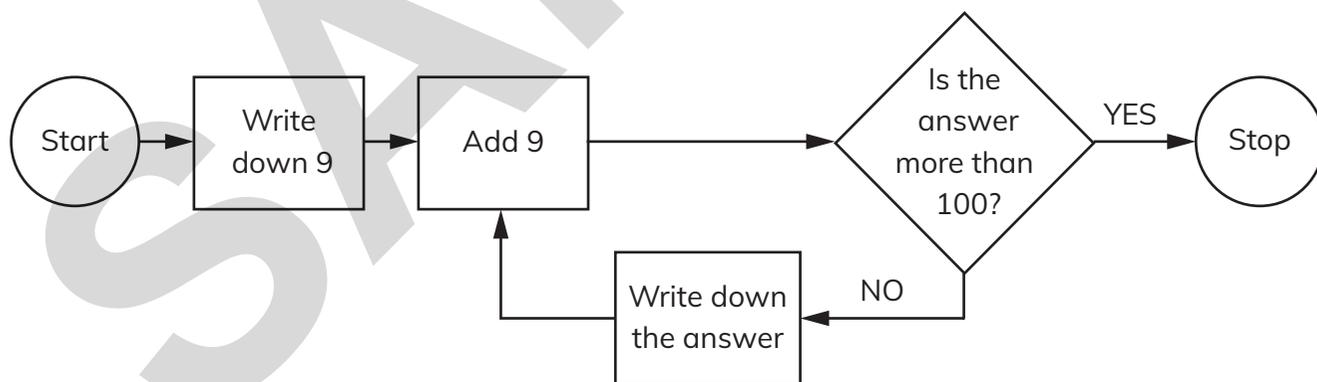
50th term:

7 Safia counts back in steps of 0.5 starting at 2.9.

a What is the 5th number in her sequence?

b What is the 10th number in her sequence?

8 a Follow the instructions in the flow diagram to generate a sequence.



b What is the position-to-term rule for the sequence?

c Imagine the sequence continues forever.
What is the 60th term in the sequence?

- 9 Kiki counts in steps of 0.03 starting at 3.26.
What are the next three numbers in her count?

3.26, 3.29, 3.32, , , ,

- 10 Write a sequence of five terms with steps of constant size which has a first term of 1 and a second term of $1\frac{2}{5}$.
-

Challenge

- 11 a Write the first five numbers in a sequence that starts at 42 and has a term-to-term rule of add 0.15
-

- b What is the 10th term in the sequence?

- 12 A sequence has a position-to-term rule of multiply by 6. Complete the table.

Position	Term
1	
2	
	30
	36
	72

- 13 The numbers in this sequence increase by equal amounts each time.

- a Write the three missing numbers.

10, , , , 42

- b What is the term-to-term rule for the sequence? _____

- c Salma says, 'The position-to-term rule is multiply by 8. Is she correct?
Explain your answer.
-
-

14 Ahmed counts back in steps of $\frac{3}{4}$ starting at $3\frac{3}{4}$.

He counts $3\frac{3}{4}$, 3, $2\frac{1}{4}$

Which of these numbers does Ahmed say?

$4\frac{1}{2}$ $1\frac{1}{2}$ $-4\frac{1}{4}$ $-6\frac{3}{4}$ $-8\frac{1}{4}$

> 2.2 Special numbers

Worked example 2

Use each of the digits 1, 3, 4, 5, 6 and 8 once to make the following 2-digit numbers.

--	--

A square number

--	--

A cube number

--	--

A multiple of 5

--	--

A square number

6	4
---	---

A cube number

	5
--	---

A multiple of 5

8	1
---	---

A square number

6	4
---	---

A cube number

3	5
---	---

A multiple of 5

cube number
square number

The only possible cube number is 64.

5 must be in the ones place for the multiple of 5.

Place these digits first.

That leaves 1, 3 and 8.

Use 8 and 1 to make a square number and put 3 in the tens place in the multiple of 5.

Exercise 2.2

Focus

1 Calculate.

a $1^2 = \square$

b $5^3 = \square$

c $9^2 = \square$

d $1^3 = \square$

2 What is the sum of the third square number and the fifth square number?

3 What is the difference between the tenth square number and the fourth square number?

4 Draw a ring around the expressions that are equal to 6^2 .

6×2

6×6

$6 + 6$

$2 \times 2 \times 2 \times 2 \times 2 \times 2$

$6 + 6 + 6 + 6 + 6 + 6$

5 Annie and Heidi play a game of 'What's my number?'

Annie says	Heidi replies
Is the number less than 50?	No
Is the number more than 100?	No
Is the number a cube number?	Yes

What is the number?

Practice

6 A number is squared and then 2 is added.

The answer is 6.

What is the number?

7 Calculate.

a $1^2 \times 1 =$

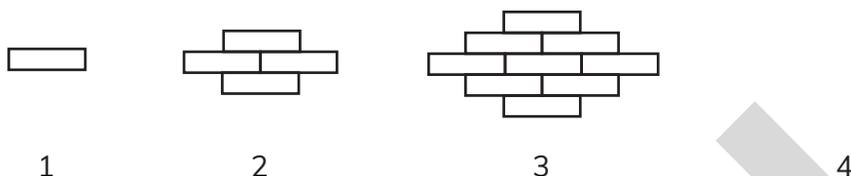
b $5 \times 5^2 =$

c $3 \times 3^2 =$

d $4^2 \times 4 =$

8 Vincent makes a sequence using patterns of rectangular bricks.

a Draw the next pattern in the sequence.



b Complete the table.

Shape	1	2	3	4	5
Number of bricks	1	4			

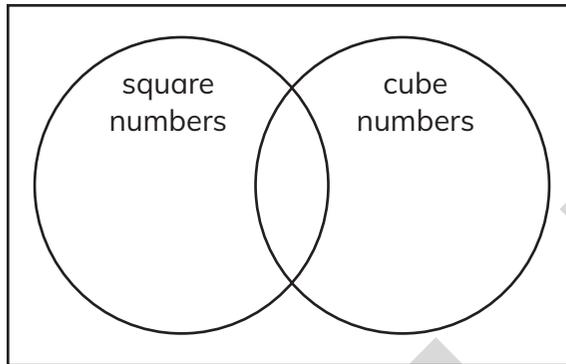
c How many bricks are needed for shape 10? How do you know?

9 Write a number between 0 and 100 in each space on the Carroll diagram. There are lots of possible answers.

	Cube number	Not a cube number
Even number		
Not an even number		

10 Write each number in the correct place on the Venn diagram.

1 8 9 10 25 27 50 64



Challenge

11 Find two 2-digit square numbers that have a sum of 130.

$$\begin{array}{|c|c|} \hline \square & \square \\ \hline \end{array} + \begin{array}{|c|c|} \hline \square & \square \\ \hline \end{array} = 130$$

12 Draw a ring around all the square numbers in this list.

1^3 2^3 3^3 4^3 5^3

13 Emma uses small cubes to make a larger cube. She uses 16 cubes to make the base of her cube.

How many small cubes does Emma use to make the larger cube?
How do you know?

14 Put these values in order starting with the smallest.

5^2 2^3 3^3 3^2

15 Use each of the digits 2, 3, 4, 6, 7 and 8 once to make these numbers.

$$\begin{array}{|c|} \hline \square \\ \hline \end{array} \text{ A square number}$$

$$\begin{array}{|c|c|} \hline \square & \square \\ \hline \end{array} \text{ A square number}$$

$$\begin{array}{|c|} \hline \square \\ \hline \end{array} \text{ A cube number}$$

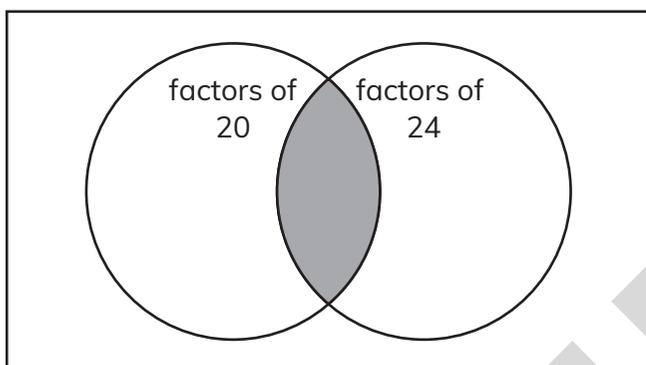
$$\begin{array}{|c|c|} \hline \square & \square \\ \hline \end{array} \text{ A cube number}$$

> 2.3 Common multiples and factors

Worked example 3

Write these numbers in the correct place on the Venn diagram.

1 2 3 4 5 6 7



common factor common factor
factor multiple multiple

What is special about the numbers in the shaded area?

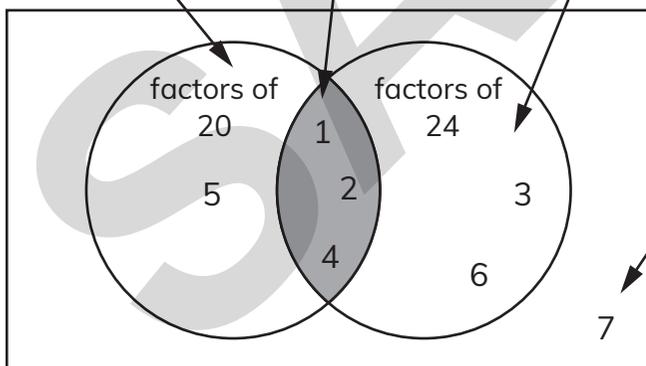
factors of
20 are:
1, 2, 4, 5

1, 2 and 4
are common
factors of 20
and 24

factors of
24 are:
1, 2, 3, 4, 6

Tip

Make sure you include every number in the diagram. You could tick each number as you place it.



7 is not a
factor of
either 20
or 24

The numbers in the shaded area are common factors of 20 and 24.

Exercise 2.3

Focus

1 The multiples of 9 are shaded on the hundred square.

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

- a Draw a ring around all the multiples of 5.
 b List the common multiples of 5 and 9.

2 Sofia is thinking of a number.



My number is a multiple of 2. My number is a multiple of 7.

Tick the number that Sofia could be thinking of.

9	27	28	72
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3 Find all the common factors of these numbers.

a 6 and 8

b 8 and 12

4 Complete the sentence.

Every number with a factor of 10 must also have factors of

, and

Practice

5 Here are four labels.

multiplies of 2	multiples of 7	not a multiple of 2	not a multiple of 7
-----------------	----------------	---------------------	---------------------

Write each label in the correct place on the Carroll diagram.

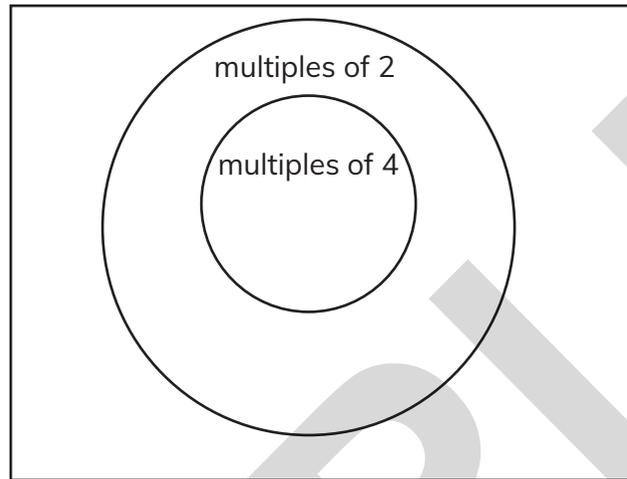
	28	56	12
			48
	35	63	55
			47

6 Faisal is thinking of a number. He says, 'My number is a multiple of 6.'
What three other numbers must Faisal's number be a multiple of?

- 7 Here is a Venn diagram for sorting numbers.

Write each number in the correct place on the diagram.

8 9 10 11 12



- 8 Look at this set of numbers.

13 18 21 36 45

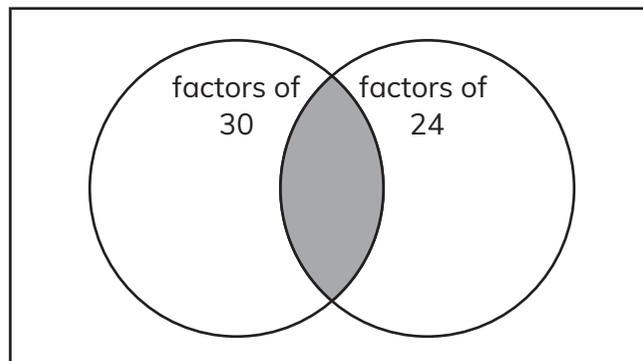
- a Which two numbers are factors of 90?

- b Which two numbers are multiples of 6 and 9?

Challenge

- 9 Write these numbers in the correct place on the Venn diagram.

1 2 3 4 5 6 7 8 9



What is special about the numbers in the shaded area?

- 10 A light flashes every 4 minutes and a bell rings every 5 minutes.

The light flashes and the bell rings at the same time.
How long will it be until this happens again?

- 11 Omar packs boxes of mangoes and boxes of peaches.

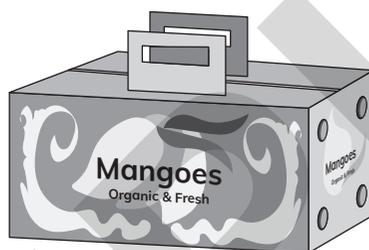
Each box contains the **same** number of fruits.

Omar packs 56 mangoes and 49 peaches.

Ahmed says, 'There will be 8 pieces of fruit in each box.'

Hassan says, 'There will be 7 pieces of fruit in each box.'

Who is correct? Explain your answer.



- 12 Cakes are sold in packs of eight.

Mr Mason wants to buy enough cakes to share equally between six people with no cakes left over.

What is the smallest number of packs he can buy?

Show your working.

3

Averages

> 3.1 Mode, median, mean and range

Worked example 1

What is the range of these ages?

43, 54, 67, 22, 43, 18, 19, 61, 59

average mean median
mode range

The highest age is 67.

The lowest age is 18.

$$67 - 18 = 49$$

The range is 49 years.

Find the highest and lowest ages.

Subtract the lowest from the highest.

Remember to write the range with the correct units.

Exercise 3.1

Focus

1 Fill in the boxes to work out the mean of the following numbers:

a 7, 3 and 2

$$\square + \square + \square = \square$$

$$\square \div 3 = \square$$

The mean is \square .

b 10, 4, 7, 4, 5

$$\square + \square + \square + \square + \square = \square$$

$$\square \div 5 = \square$$

The mean is \square .

2 Work out the range of these masses.

a 2 kg, 5 kg, 11 kg, 2 kg, 10 kg, 9 kg

$$\begin{array}{ccc} \text{highest mass} & & \text{lowest mass} & & \text{range} \\ \boxed{} & - & \boxed{} & = & \boxed{} \end{array}$$

b 150 g, 103 g, 130 g, 127 g, 144 g

$$\begin{array}{ccc} \text{highest mass} & & \text{lowest mass} & & \text{range} \\ \boxed{} & - & \boxed{} & = & \boxed{} \end{array}$$

3 Draw lines to match the descriptions to the set of data.

The range is 5. 5, 6, 5, 7, 8

The mode is 5. 5, 3, 4, 9, 8

The median is 5. 2, 6, 4, 7, 4

The mean is 5. 5, 6, 1, 6, 7

Practice

4 Jenny and Carrie took a spelling test each week. These are the scores from 8 tests.

Week	1	2	3	4	5	6	7	8
Jenny	9	10	7	3	19	15	12	13
Carrie	17	7	5	11	12	7	15	6

a Work out Jenny's mean score and work out Carrie's mean score.

b Work out the range of Jenny's scores and the range of Carrie's scores.

- c Tick the true descriptions of Jenny and Carrie's scores.

Jenny has a higher range of scores, so she scored higher than Carrie.

Carrie's mean average is lower than Jenny, so Jenny scored better than Carrie in every test.

Jenny's average score was higher, but her scores were less consistent.

Carrie's range is lower, so her scores were less spread out.

Carrie's average score was lower than Jenny's.

- 5 Erik and Halima recorded how many minutes they practised playing the guitar for one week. Here are their times in minutes.

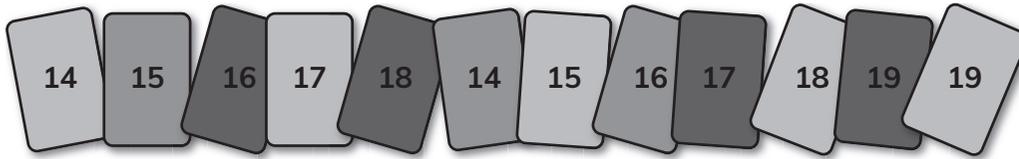
Day	1	2	3	4	5	6	7
Erik	6	5	6	8	5	5	7
Halima	9	8	2	9	8	4	9

- a Work out the mean average time each person practised for.

- b Work out the range of Erik's scores and the range of Halima's scores.

- c Write two sentences to describe the amount of time Erik and Halima practised for.

6



Make sets of six numbers from these cards that have these mean, mode and median averages:

- a mean 16, mode 16, median 16

- b mean 17, mode 18, median 17.5

- c mean 16, modes 15 & 17 (bimodal), median 16

Challenge

- 7 The mean has been calculated for each set of numbers below. One number in each set is hidden. Work out the missing number.

- a The mean is 6.

7 9 6

- b The mean is 10.

14 11 9 7

- c The mean is 15.

11 19 18 13

- d The mean is 19.

16 31 4 7 23

- e The mean is 51.

47 63 38 49

- 8 Five children have worked out the mode, median and range of their heights, weights and ages. They have recorded them in this table.

	Mode	Median	Range
Height	135 cm	132 cm	16 cm
Weight	33 kg	33 kg	16 kg
Age	10 years & 10 months	11 years & 5 months	10 months

Find a possible solution for the heights, weights and ages of the five children and record it here.

Child 1
 Height:
 Weight:
 Age:

Child 2
 Height:
 Weight:
 Age:

Child 3
 Height:
 Weight:
 Age:

Child 4
 Height:
 Weight:
 Age:

Child 5
 Height:
 Weight:
 Age:

- 9 These are the times in seconds of two runners in six 100 m races.

Runner 1: 12.7, 10.4, 11.4, 10.8, 12.2, 10.9

Runner 2: 12.5, 11.9, 10.3, 11.6, 10.8, 11.9

- a Find the mean and range for each runner.

- b Give reasons for who is the better runner.

SAMPLE



4

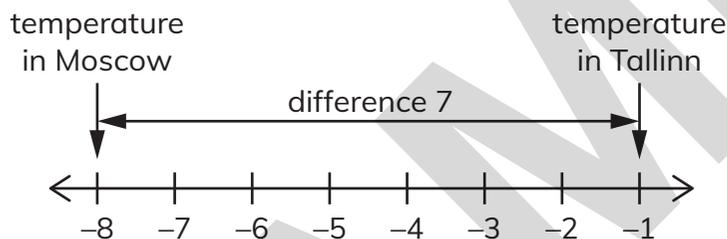
Addition and subtraction (1)

> 4.1 Positive and negative integers

Worked example 1

The temperature in Tallinn is -1°C and in Moscow it is -8°C . What is the difference between these two temperatures?

integer negative number
positive number



- Draw a number line.
- Mark the temperatures.
- Count the number of degrees between the two marks.

Difference = 7°C

Exercise 4.1

Focus

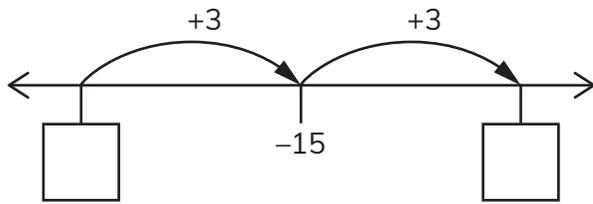
- 1 The temperature at 8 a.m. is -2°C .
By midday it is 5° warmer.
What is the temperature at midday?

Tip

Remember you can draw a number line to help you with these questions.



2 Use the number line to help you answer these questions.



a $-15 - 3 = \square$

b $\square + 3 = -15$

3 Work out the difference between each pair of numbers.

a 6 and -2 \square

b -3 and -5 \square

c -4 and -8 \square

d -5 and 3 \square

e -6 and -1 \square

f 0 and -2 \square

Practice

4 The table shows the number of rhinos in the world.

The Black rhino has made a comeback from the brink of extinction.

Rhino	Number
Black rhino	About 5000
Greater one-horned rhino	More than 3500
Javan rhino	56 – 68
Sumatran rhino	80
White rhino	More than 20 000

Source WWF 2020



Use the information in the table to write an estimate of the total number of rhinos in the world.

- 5 How many more people lived in Tokyo than in New York in 2015?

City	Population in 2015
Tokyo	9 273 000
New York	8 582 000

- 6 The temperature is -15°C .

a The temperature rises by 6°C . What is the new temperature?

b The original temperature falls by 6°C . What is the new temperature?

- 7 At a ski resort, the morning temperature was -11°C .

In the afternoon, the temperature was 5°C .

What was the difference in temperature between the morning and the afternoon?

- 8 The table shows the temperatures in some cities and the difference in their temperature from London on one day. Complete the table.

City	Difference in temperature from London	Temperature (°C)
London		-1
Moscow	24 degrees colder	-25
New York	10 degrees colder	
Oslo	13 degrees colder	
Rio de Janeiro		26

- 9 Ola wants to find the answer to $1999 + 1476$.

Tick (✓) all the calculations that will give the same answer.

$2000 + 1477$
 $2000 + 1475$
 $2005 + 1400$

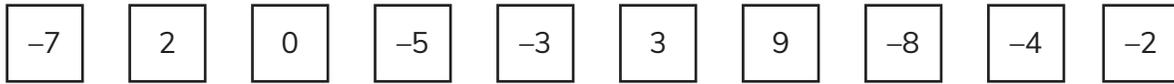
$2005 + 1470$
 $2005 + 1500$

Challenge

- 10 Petra is thinking of a number. She adds 4896 to her number, then subtracts 5846. She gets the answer 9481. What number is Petra thinking of?

- 11 Meera says, 'I can work out $79\,999 - 19\,999$ in my head.' Explain how Meera could do the calculation mentally. Work out the answer to the calculation.

12 Here are ten number cards.



Choose one card to complete each number sentence.

$$\boxed{-7} + \boxed{} = \boxed{-4}$$

$$\boxed{-5} - \boxed{3} = \boxed{}$$

13 In some countries, people who have been married for many years have special anniversaries.

Number of years married	Special anniversary
25	Silver
40	Ruby
50	Golden
60	Diamond

a Mandy and Derek were married in 1972.

In what year was their ruby anniversary?

b Neve and Sean had their diamond anniversary in 2021.

In what year was their silver anniversary?

14 The difference between two numbers is 3.

One number is -2 .

What could the other number be?

Find two different answers.

> 4.2 Using letters to represent numbers

constant variable

Worked example 2

a and b each represent a number between 1 and 9 inclusive.

Aba knows that $a + 4 = b$

Write all the values Aba can use to make the statement true.

$$a = 1 \text{ and } b = 5$$

$$a = 2 \text{ and } b = 6$$

$$a = 3 \text{ and } b = 7$$

$$a = 4 \text{ and } b = 8$$

$$a = 5 \text{ and } b = 9$$

Work systematically.

Start with $a = 1$:

$$1 + 4 = 5$$

so the value of b is 5

When $a = 5$, $b = 9$

9 is the largest possible number, so you have found all the possible answers.

Exercise 4.2

Focus

- Hamda plays a board game using a dice. She uses the instructions together with her dice score to work out how many spaces she moves.

d represents the dice score.

For example:

Score	Instruction	Spaces moved
	$d + 4$	9 spaces

Work out how many spaces Hamda moves.

	Score	Instruction	Spaces moved
a		$5 + d$	
b		$3 - d$	
c		$d - 2$	

2 Mira has 10 more bottles of soda than Noura.



a Complete the table where m represents the number of bottles that Mira has and n represents the number of bottles that Noura has.

m	15		11		21
n	5	2		16	

b Write a number sentence linking m , n and 10.

- 3 Olaf and Pierre have 23 toy cars altogether.
Olaf has x toy cars and Pierre has y toy cars.



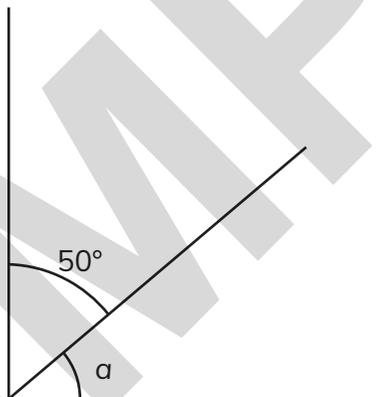
- a Complete this table to show the number of toy cars each boy has.

x (number of toy cars Olaf has)	7		11		14
y (number of toy cars Pierre has)		4		18	

- b Write a number sentence linking x , y and 23.

Practice

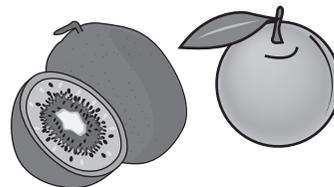
- 4 The diagram shows a right angle divided into two smaller angles.



Calculate the size of angle a .

$$a = \boxed{}^\circ$$

- 5 There are x kiwi fruits and y oranges in a bowl.
Meng knows that $x + y = 7$.



Write three different pairs of values for x and y .

- 6 x and y each represent a number that is a multiple of 5.

$$x + y = 50$$

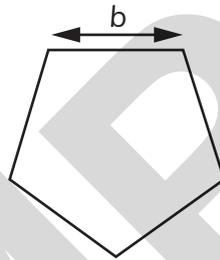
Write all the possible values of x and y .

One is done for you.

x	5									
y	45									

Challenge

- 7 The perimeter (p) of a regular pentagon is the sum of the lengths of the sides.

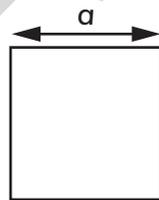


$$p = b + b + b + b + b$$

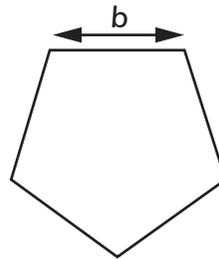
The perimeter of a regular pentagon is 40 cm.

What is the value of b ?

- 8 The perimeter (p) of a square and a regular pentagon is the same.



$$p = a + a + a + a$$



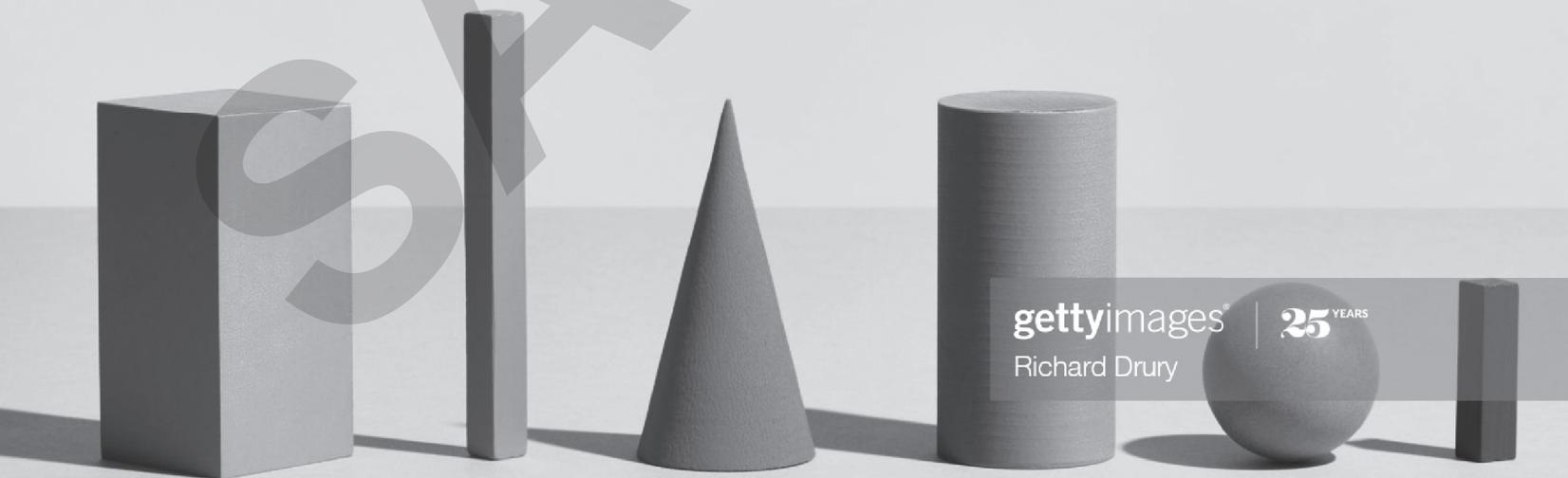
$$p = b + b + b + b + b$$

If the perimeter of each shape is 20 centimetres, what is the value of a and b ?

- 9 a If $\square = 7$ and $\bigcirc = 5$ what is the value of $\square + \bigcirc + \bigcirc$?

- b If $a = 7$ and $y = 5$ what is the value of $a + b + b$?

- c What is the same and what is different about these two questions?



> 5.1 Quadrilaterals

Worked example 1

I am a quadrilateral. All my sides are equal in length. None of my angles are 90° . I have two pairs of equal angles. What shape am I?

Square or rhombus ...

Cannot be square ...

Must be a rhombus.

All sides are equal in length.

No angles are 90° .

Two pairs of equal angles.

bisect decompose
diagonal justify
parallel trapezia

Exercise 5.1

Focus

- 1 Name each of these special quadrilaterals. All the names are in the box.

kite rhombus square
parallelogram trapezium
rectangle isosceles trapezium





