AQA

Centre number						Candidate number				

Surname _____

Forename(s) _____

Candidate signature _____

I declare this is my own work.

GCSE MATHEMATICS

F

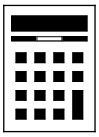
Foundation Tier Paper 2 Calculator

Shadow paper based on November 2023 question paper

Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:
- a calculator
- mathematical instruments



Instructions
- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.
- You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer book.

Advice

In all calculations, show clearly how you work out your answer.

For Examiner's Use	
Pages	Mark
2–3	
4–5	
6–7	
8–9	
10–11	
12–13	
14–15	
16–17	
18–19	
20–21	
22–23	
24–25	
TOTAL	

Answer **all** questions in the spaces provided.

Do not write outside the box

1 Convert 600 centimetres to metres.

[1 mark]

Answer _____ m

2 The temperature was −13°C and **increases** by 6°C

Work out the new temperature.

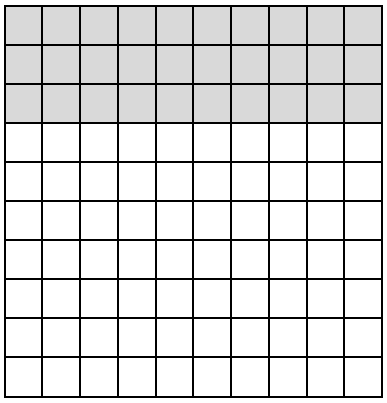
[1 mark]

Answer _____ °C

Copyright © 2024 AQA and its licensors. All rights reserved.

Do not write outside the box

3 (a) Here is a grid.

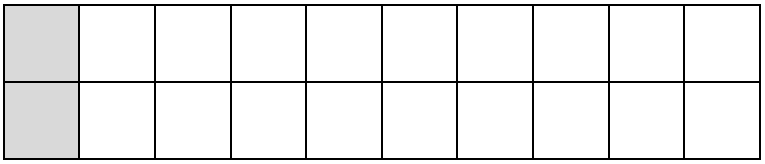


What percentage of the grid is shaded?

[1 mark]

Answer _____ %

3 (b) Here is a different grid.



What percentage of the grid is shaded?

[1 mark]

Answer _____ %

4

Turn over ►

Copyright © 2024 AQA and its licensors. All rights reserved.

Do not write outside the box

4 (a) Solve $\frac{x}{5} = 8$

[1 mark]

$x =$ _____

4 (b) Solve $3x - 2 = 13$

[2 marks]

$x =$ _____

5 Work out $\frac{5}{4}$ as a decimal.

[1 mark]

Answer _____

Copyright © 2024 AQA and its licensors. All rights reserved.

Do not write outside the box

6 Complete the bank statement.

[3 marks]

Date	Description	Credit (£)	Debit (£)	Balance (£)
01/11/2021	Starting balance			924.37
05/11/2021	Rent		650.00	
14/11/2021	Refund	35.00		
27/11/2021	Wages	2248.85		

7 Put all the numbers 4, 5, 10, 14 and 20 into the grid
so that the numbers in each row and each column **multiply** to 280

[3 marks]

	7		280
	2	28	280
		1	280
280	280	280	

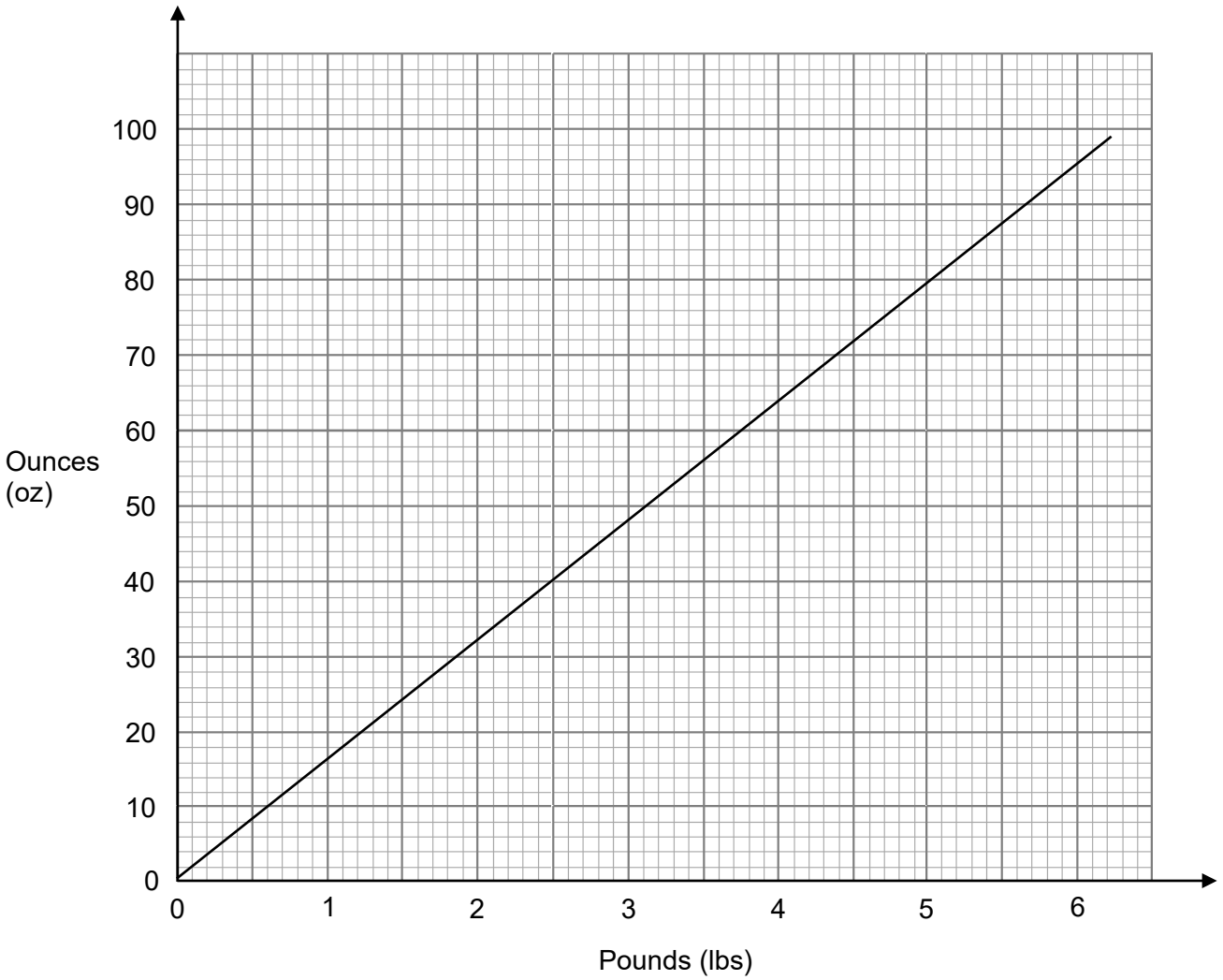
10

Turn over ►

Copyright © 2024 AQA and its licensors. All rights reserved.

Do not write outside the box

8 The graph below is used to convert between pounds (lbs) and ounces (oz).



8 (a) Convert 48 ounces into pounds.

[1 mark]

Answer _____ lbs

8 (b) Convert 200 lbs into ounces.

[2 marks]

_____

_____

Answer _____ oz

Copyright © 2024 AQA and its licensors. All rights reserved.

Do not write outside the box

9 Oscar is estimating the answer to $413 + 1684$

9 (a) He rounds each number to the nearest 10

Work out his estimate.

[2 marks]

Answer _____

9 (b) Oscar says,

"My estimate will be less than the exact answer."

How does he know this **without working out the exact answer**?

[1 mark]

Turn over for the next question

6

Copyright © 2024 AQA and its licensors. All rights reserved.

Do not write outside the box

10 Here are the salaries, in £, of the 6 workers in a company.

17 500 26 000 27 500 27 500 27 500 141 000

10 (a) Work out the mean salary.

[2 marks]

Answer £ _____

10 (b) Is the mean a good average to represent the salaries?

Tick a box.

Yes ☐ No ☐

Give a reason for your answer.

[1 mark]

Copyright © 2024 AQA and its licensors. All rights reserved.

Do not write outside the box

11 Kara's mass is 65 kilograms.

Work out her mass in stones and pounds.

Use 1 kilogram = 2.2 pounds

14 pounds = 1 stone

[3 marks]

Answer _____ stones _____ pounds

Turn over for the next question

6

Copyright © 2024 AQA and its licensors. All rights reserved.

Do not write outside the box

12 (a) A squash is made from juice and water in the ratio

juice : water = 1 : 5

How much **squash** can be made using 70 millilitres of juice?

[2 marks]

Answer _____ ml

12 (b) A different squash is made from juice and water in the ratio

juice : water = 1 : 9

What fraction of this squash is juice?

[1 mark]

Answer _____

Copyright © 2024 AQA and its licensors. All rights reserved.

Do not write outside the box

13 Multiplying y by 4 gives the same result as adding 12 to y

13 (a) Write this as an equation.

[2 marks]

Answer _____

13 (b) Show that the value of y is **not** 5

[1 mark]

Turn over for the next question

6

Copyright © 2024 AQA and its licensors. All rights reserved.

Do not write outside the box

14 A school is organising a bowling trip for 56 students.

The costs are shown in the table.

Minibus hire	£115 per minibus
Driver	£179 per driver
Each game	£6.50 per student per game

Each minibus can hold 16 students.

Each student will play 2 games of bowling.

The cost of the trip will be shared equally by the 56 students.

Work out the cost per student.

[5 marks]

Answer £ _____

Copyright © 2024 AQA and its licensors. All rights reserved.

Do not write outside the box

15 An ordinary fair dice is rolled twelve times.

Here are the first eleven results.

5 2 6 6 1 4 6 1 3 4 6

Write down the probability of getting a 3 on the next roll.

[1 mark]

Answer _____

16 $r : w = 1 : 5$

Write down the ratio $r^2 : w^2$

[1 mark]

Answer _____ : _____

Turn over for the next question

7

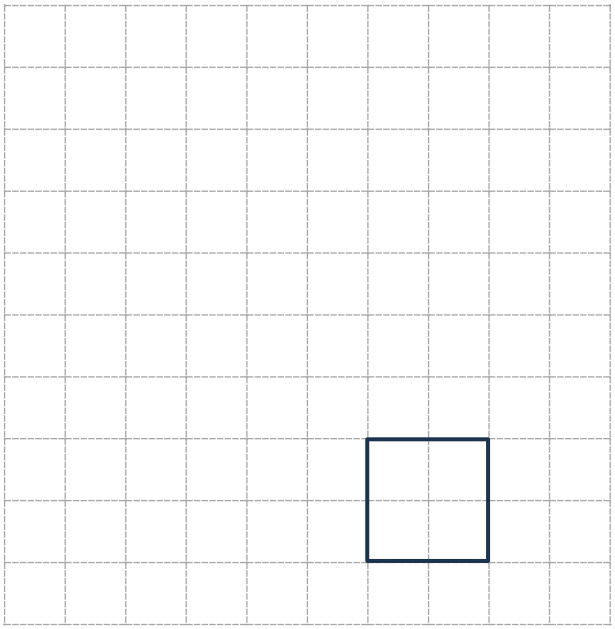
Copyright © 2024 AQA and its licensors. All rights reserved.

Do not write outside the box

17 (a) A square is drawn on a grid.

On the grid, draw a **congruent** square.

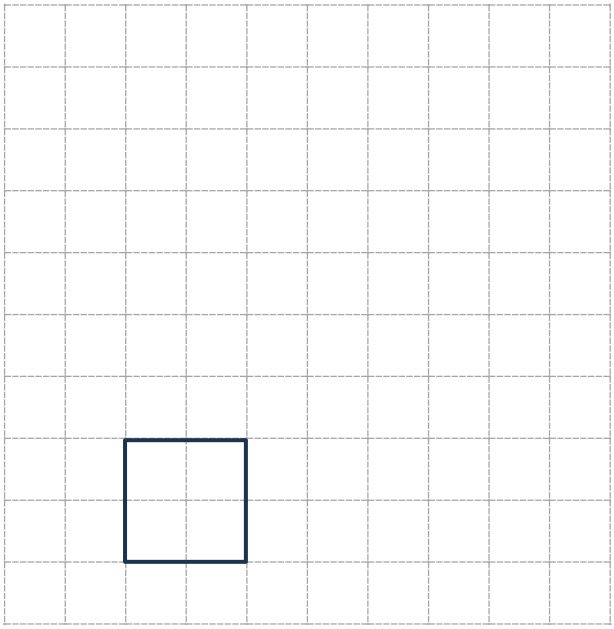
[1 mark]



17 (b) Here is the square on a different grid.

On this grid, draw a **similar** square which is **not** congruent.

[1 mark]



Copyright © 2024 AQA and its licensors. All rights reserved.

Do not write outside the box

18 A tub contains 66 chocolates.

The chocolates are milk or dark and either have a caramel or fruit centre.

$\frac{3}{11}$ of the chocolates have a fruit centre.

There are twice as many milk chocolates as dark.

8 of the dark chocolates have a fruit centre.

18 (a) Complete the two-way table.

[4 marks]

	Caramel centre	**Fruit centre**
Milk		
Dark		8

One chocolate is chosen at random.

18 (b) What is the probability that it is a dark chocolate with a fruit centre?

[1 mark]

Answer _____

18 (c) What is the probability that it has a caramel centre?

[1 mark]

_____

Answer _____

8

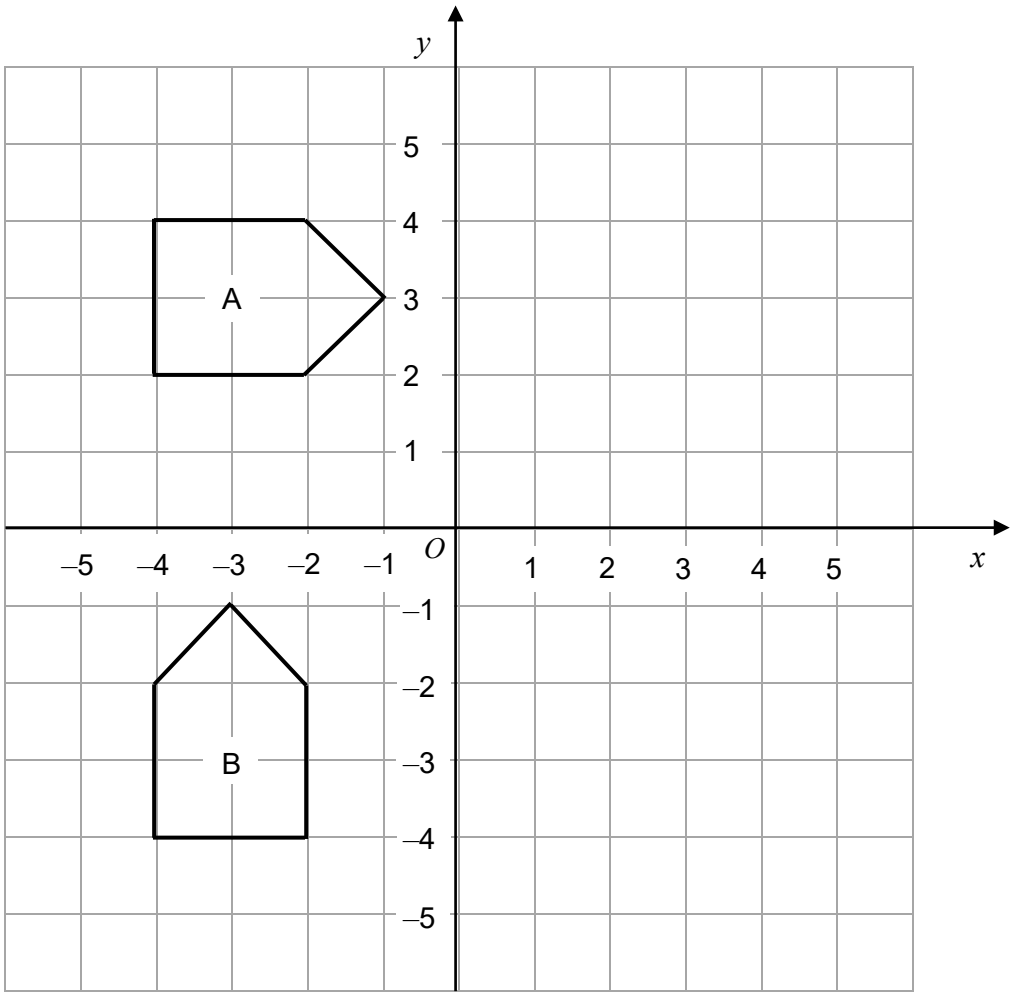
Turn over ►

Copyright © 2024 AQA and its licensors. All rights reserved.

Do not write outside the box

19 Describe fully the **single** transformation that maps shape A to shape B.

[3 marks]

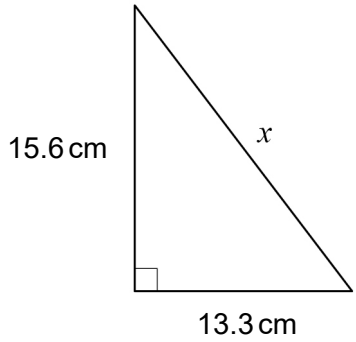


Copyright © 2024 AQA and its licensors. All rights reserved.

Do not write outside the box

20 Use Pythagoras' theorem to work out the value of x.

[3 marks]



Not drawn accurately

$x =$ _____ cm

Turn over for the next question

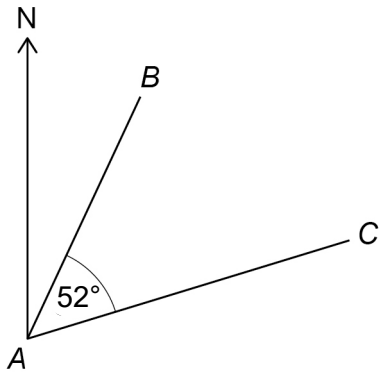
6

Turn over ►

Copyright © 2024 AQA and its licensors. All rights reserved.

Do not write outside the box

21



Not drawn accurately

The 3-figure bearing of *B* from *A* is 024°

Work out the 3-figure bearing of *C* from *A*.

[2 marks]

Answer _____ °

22 How many edges does a cuboid have?

[1 mark]

Answer _____

Copyright © 2024 AQA and its licensors. All rights reserved.

Do not write outside the box

23 Three shops sell the same type and size of batteries.

Shop A

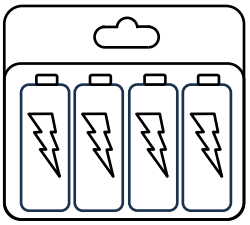
£3.19 each

Shop B

£3.82 each

Buy one,
get one half price

Shop C



Pack of 4

Was £14.60

Now $\frac{1}{5}$ off

Which shop is the best value for 8 batteries and what is the total cost in that shop?
Show working to support your answer.

[5 marks]

Shop _____ Total cost £ _____

8

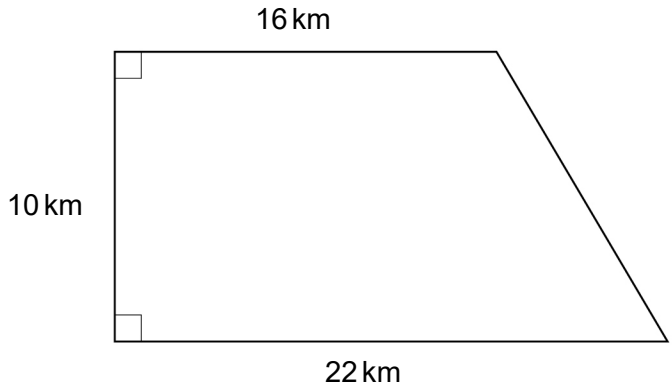
Turn over ►

Copyright © 2024 AQA and its licensors. All rights reserved.

Do not write outside the box

24 The boundaries of a city form a trapezium.

Not drawn accurately



Population density = $\frac{\text{number of people}}{\text{area}}$

The population density of the city is 7940 people per square kilometre.

Work out the number of people who live in the city.

[4 marks]

Answer _____

Copyright © 2024 AQA and its licensors. All rights reserved.

Do not write outside the box

25 Round 1 of voting for Head Student is taking place in a school.

25 (a) To reach round 2, a student must receive **at least** $\frac{21}{100}$ of the votes.

What is the largest possible number of students that can reach round 2?

Circle your answer.

[1 mark]

100 79 3 4

25 (b) There are 300 votes in round 1

Sam receives 120 votes.

Chloe draws a pie chart to represent the results.

Here is her method to work out the angle needed for Sam.

$120 \div 300 \times 100 = 40$

The angle should be 40°

Is Chloe's method correct?

Tick a box.

Yes ☐ No ☐

Give a reason for your answer.

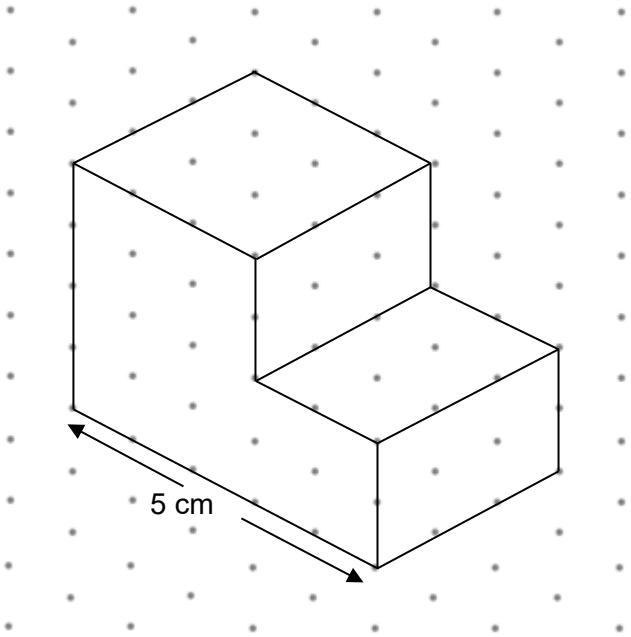
[1 mark]

6

Copyright © 2024 AQA and its licensors. All rights reserved.

Do not write outside the box

26 Here is a prism drawn on an isometric grid.



Work out the volume of the prism.

[3 marks]

Answer _____ cm^3

Copyright © 2024 AQA and its licensors. All rights reserved.

Do not write outside the box

27 Yasmine drove 237 miles.

Her average speed for the first 4 hours was 34 miles per hour.

Her average speed for the rest of the journey was 50.5 miles per hour.

Work out her average speed for the whole journey.

[4 marks]

Answer _____ miles per hour

Turn over for the next question

7

Copyright © 2024 AQA and its licensors. All rights reserved.

Do not write outside the box

28 Here is the term-to-term rule for a sequence.

Double the previous term and add 5

The first three terms of the sequence are $a + 2$ $2a + 9$ $4a + 23$

Show that the sum of the first **four** terms is a multiple of 5

[3 marks]

Copyright © 2024 AQA and its licensors. All rights reserved.

Do not write outside the box

29 A straight line passes through (2, 16) and (7, 31)

Work out the equation of the line.

Give your answer in the form $y = mx + c$

[3 marks]

Answer _____

END OF QUESTIONS

6

Copyright © 2024 AQA and its licensors. All rights reserved.

Do not write outside the box

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

Copyright information

For confidentiality purposes, all acknowledgements of third-party copyright material are published in a separate booklet. This booklet is published after each live examination series and is available for free download from www.aqa.org.uk.

Permission to reproduce all copyright material has been applied for. In some cases, efforts to contact copyright-holders may have been unsuccessful and AQA will be happy to rectify any omissions of acknowledgements. If you have any queries please contact the Copyright Team.

Copyright © 2024 AQA and its licensors. All rights reserved.