2017 national curriculum tests

Key stage 2

Mathematics

Paper 3: reasoning

First name	
Middle name	
Last name	
Date of birth	Day ___ Month ___ Year ___
School name	
DfE number	

F00080A0124

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Please do not write on this page.

F O O O 8 O A O 2 2 4

Instructions

You **must not** use a calculator to answer any questions in this test.

Questions and answers

You have **40 minutes** to complete this test.

Follow the instructions for each question.

Work as quickly and as carefully as you can.

If you need to do working out, you can use the space around the question.
Do not write over any barcodes.

Some questions have a method box like this:
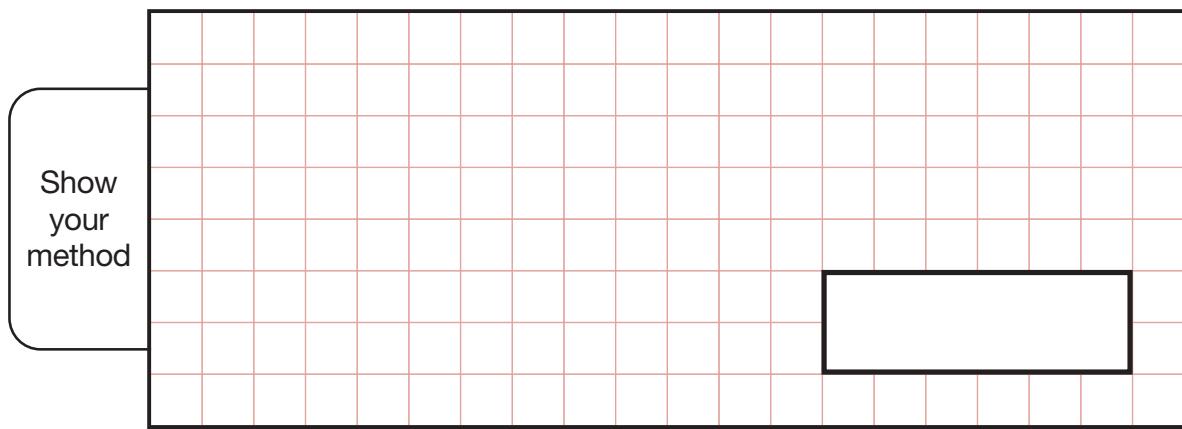
Show
your
method

For these questions, you may get a mark for showing your method.

If you cannot do a question, **go on to the next one**.
You can come back to it later, if you have time.

If you finish before the end, **go back and check your work**.

Marks

The number under each line at the side of the page tells you the maximum number of marks for each question.

1 Write the missing number to make this **division** correct.

$$75 \div \boxed{} = 7.5$$

1 mark

2 A group of friends earns £80 by washing cars.

They share the money **equally**.

They get £16 each.

How many friends are in the group?

1 mark

3 Chen uses these digit cards.

| 5 | 6 | 9 |
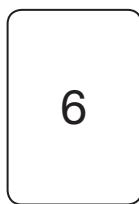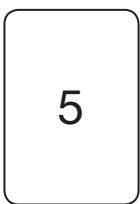
She makes a 2-digit number and a 1-digit number.

She multiplies them together.

Her answer is a **multiple of 10**

What could Chen's multiplication be?

☐☐ × ☐
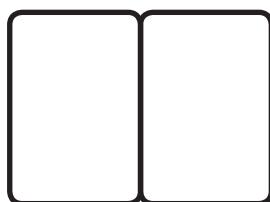
1 mark

4 This graph shows the temperature in °C from 2 am to 3 pm on a cold day.
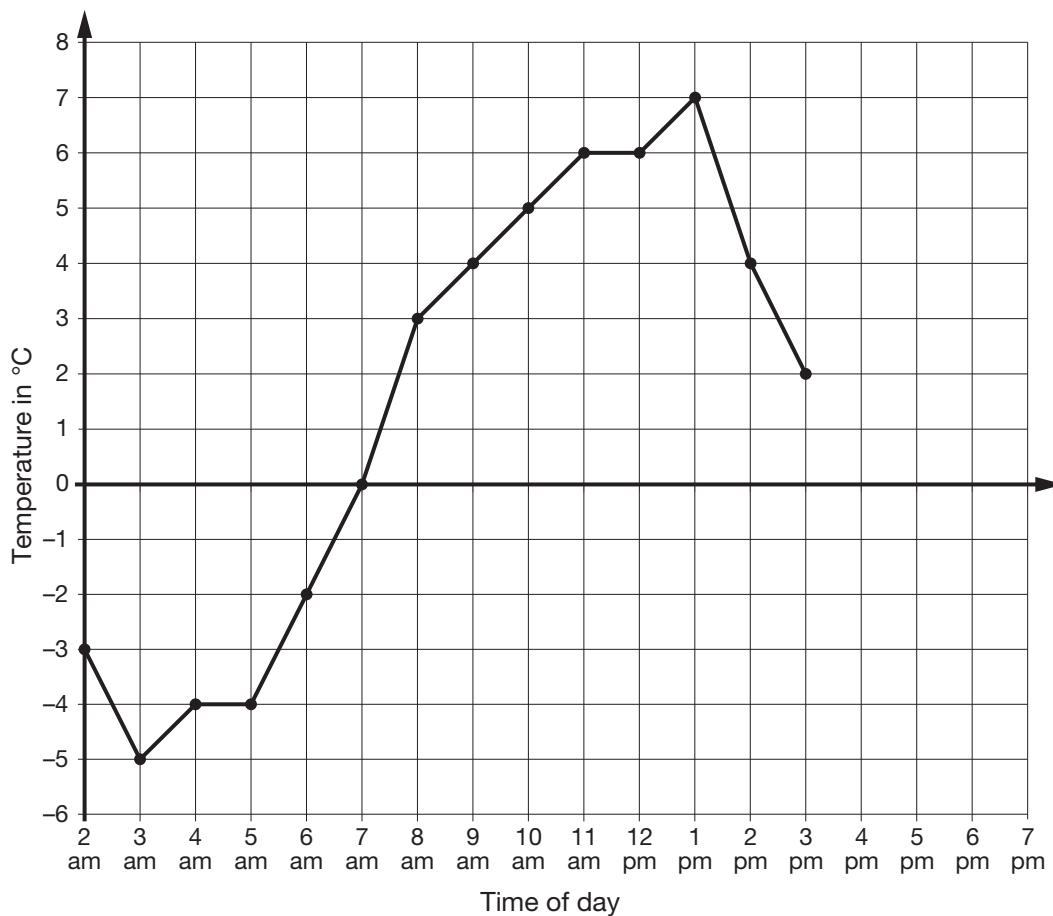
How many degrees **warmer** was it at 3 pm than at 3 am?

[   ] °C

1 mark

At 6 pm the temperature was 4 degrees lower than at 3 pm.

What was the temperature at 6 pm?

[   ] °C

1 mark

F 0 0 0 8 0 A 0 6 2 4

5 The children at Farmfield School are collecting money for charity.

Their target is to collect £360

So far they have collected £57.73

How much **more** money do they need to reach their target?

£

1 mark

6 William wants to travel to Paris by train.

He needs to arrive in Paris by **5:30 pm**.

Circle the **latest time** that William can leave London.

Leaves London	Arrives Paris
12:01	15:22
12:25	15:56
13:31	16:53
14:01	17:26
14:31	17:53
15:31	18:53
16:01	19:20

1 mark

F 0 0 0 8 0 A 0 8 2 4

7   Here is a triangle drawn on a coordinate grid.
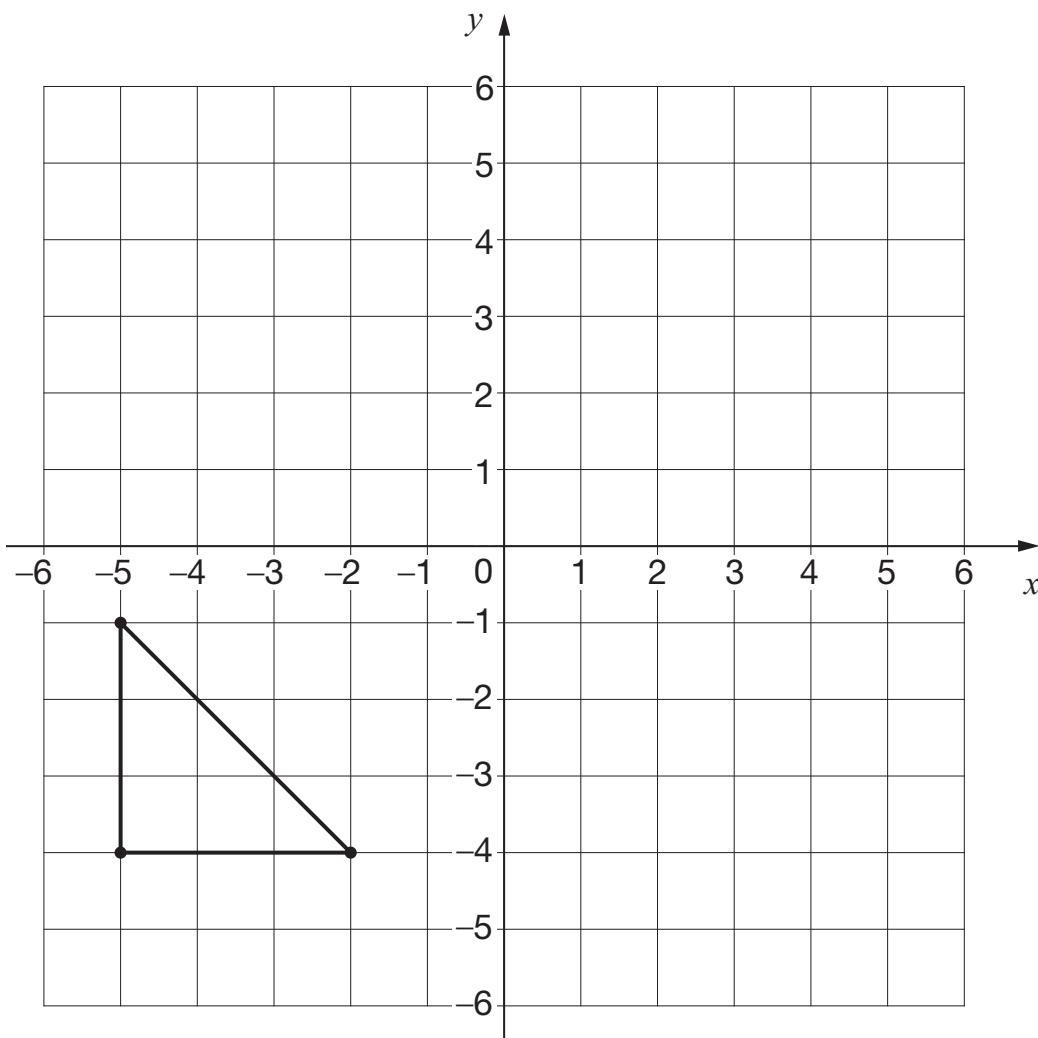
1 mark

The triangle is translated **7 right** and **5 up**.

Draw the triangle in its new position.

F 0 0 0 8 0 A 0 9 2 4

8 Write three factors of 30 that are **not** factors of 15

2 marks

9 Here is the morning timetable for Chen's class this week.

Time	Mon	Tue	Wed	Thu	Fri
9:00 am–10:30 am	Maths	English	Maths	English	Maths
10:30 am–11:00 am	Break	Break	Break	Break	Break
11:00 am–12:00 pm	English	Maths	Science	Maths	English

What is the **total** number of hours for **English** on this timetable?

	hours

1 mark

F 0 0 0 8 0 A 0 1 0 2 4

10 A bottle contains 568 millilitres of milk.

Jack pours out **half a litre**.
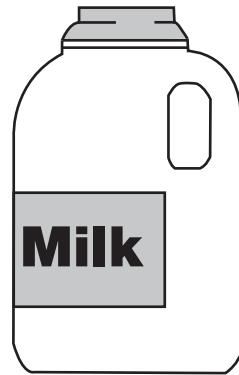
How much milk is left?

| |
| |

1 mark

11 A bicycle wheel has a diameter of 64 cm.

What is the **radius** of the bicycle wheel?

| cm |
| |

1 mark

12

24 white balloons

24

12 red balloons

12
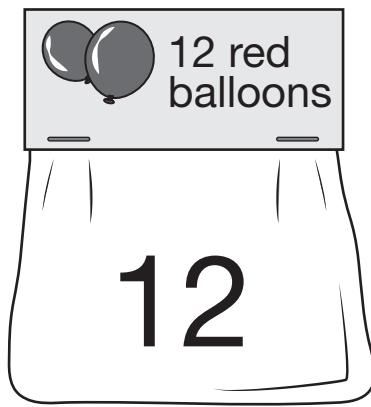
Adam buys **6** bags of white balloons.

Chen buys **3** bags of red balloons.

Adam says,

'I have four times as many balloons as Chen.'

Explain why Adam is correct.

1 mark

F 0 0 0 8 0 A 0 1 2 2 4
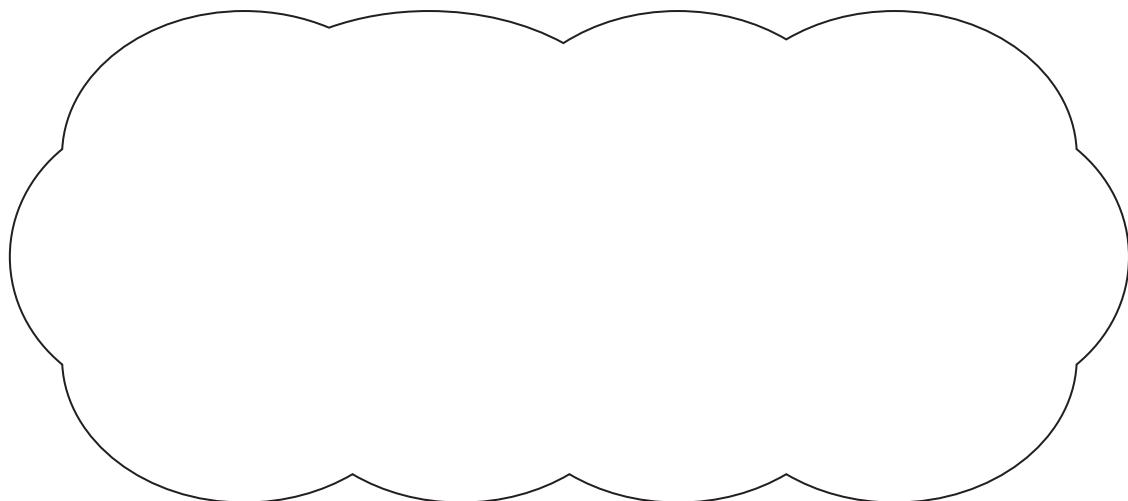
13 Circle the **pentagon** with exactly **four acute angles**.

1 mark

F 0 0 0 8 0 A 0 1 3 2 4
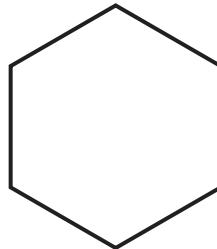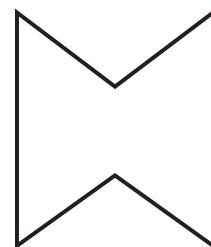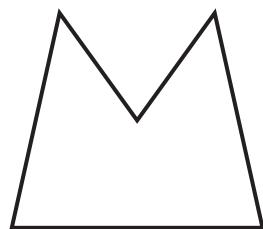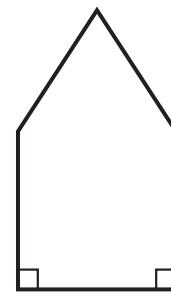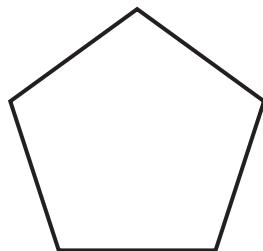
14 3 pineapples cost the same as 2 mangoes.

One mango costs £1.35
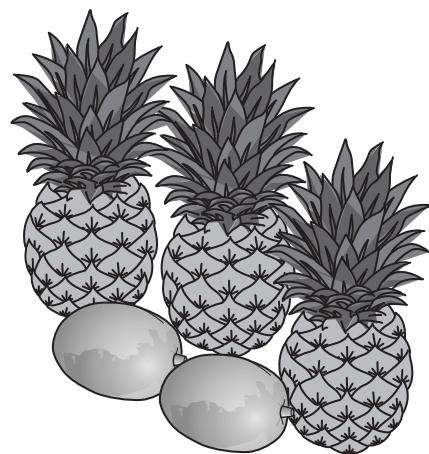
How much does **one** pineapple cost?

Show your method

£

2 marks

15   Look at the letters below.

Circle the letter below that has both parallel **and** perpendicular lines.

A C E L Z

1 mark

16
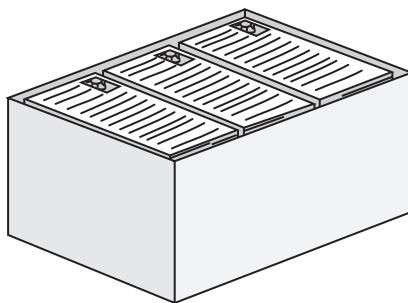
There are 2,400 leaflets in a box.

William and Ally take 450 leaflets each.

Adam and Chen share the rest of the leaflets equally.

How many leaflets does Adam get?

Show your method

2 marks

17 In each box, circle the number that is **greater**.

$1\frac{1}{2}$ 1.2

$1\frac{1}{4}$ 1.3

$1\frac{5}{100}$ 1.4

$1\frac{3}{5}$ 1.5

2 marks

18 A **square** number and a **prime** number have a total of 22

What are the two numbers?

$$\boxed{} + \boxed{} = 22$$

square
number

prime
number

1 mark

19 Dev thinks of a **whole** number.

He multiplies it by 4

He rounds his answer to the nearest 10

The result is 50

Write **all** the possible numbers that Dev could have started with.

2 marks

F 0 0 0 8 0 A 0 1 8 2 4

20
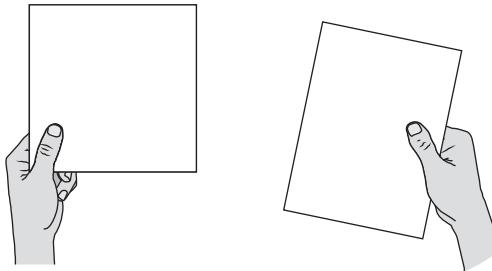
A square tile measures 20 cm by 20 cm.

A rectangular tile is 3 cm **longer** and 2 cm **narrower** than the square tile.

What is the **difference in area** between the two tiles?

Show your method

cm²
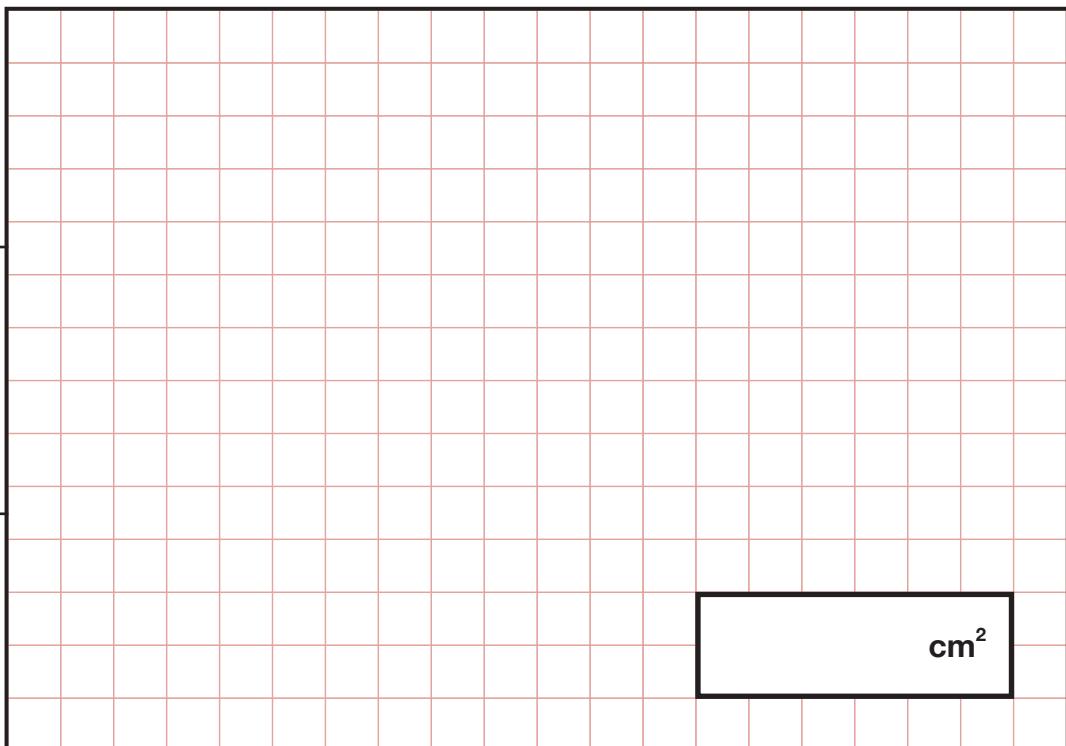
3 marks

21 The numbers in this sequence increase by the same amount each time.

Write the missing numbers.

| | 1 | $1\frac{5}{8}$ | $2\frac{1}{4}$ | |

1 mark

1 mark

F 0 0 0 8 0 A 0 2 0 2 4

22 In this diagram, the shaded rectangles are all of equal width (*w*).
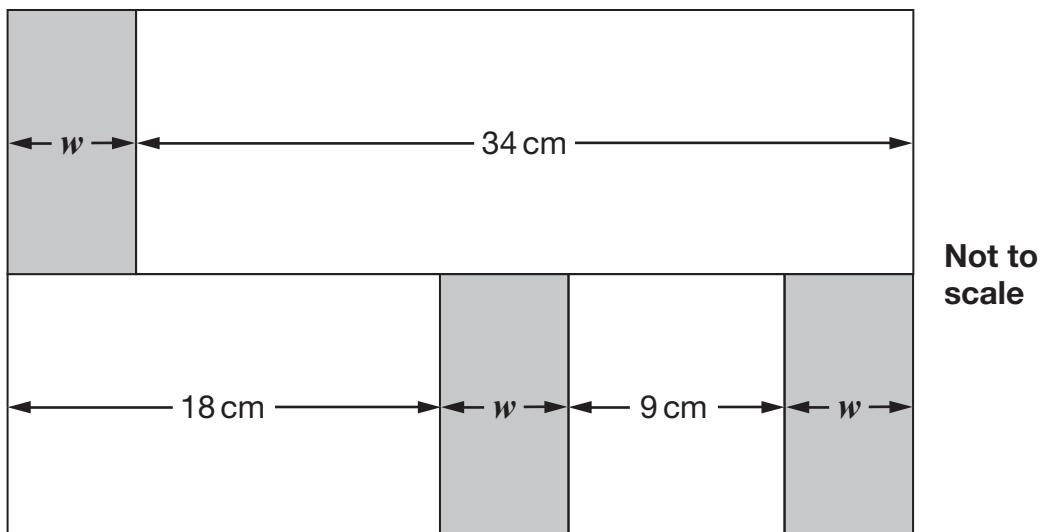
Not to scale

Calculate the width (*w*) of one shaded rectangle.

Show your method

	cm

2 marks

F 0 0 0 8 0 A 0 2 1 2 4

23   Here is a pattern of number pairs.

a	b
1	9
2	19
3	29
4	39

Complete the **rule** for the number pattern.

$$b = \boxed{} \times a - \boxed{}$$

1 mark

F 0 0 0 8 0 A 0 2 2 2 4

24 Cube A and cuboid B have the same volume.

Not to scale

A

6 cm

6 cm

4 cm

B

?

Calculate the missing length on cuboid B.

Show your method

cm

2 marks

F 0 0 0 8 0 A 0 2 3 2 4

Standards
& Testing
Agency

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Paper 3: reasoning
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F 0 0 0 8 0 A 0 2 4 2 4