National Curriculum Tests

Key Stage 2

Mathematics

Paper 2: Reasoning

First Name						
Middle Name						
Last Name						
Date of Birth	Day		Month		Year	
School Name						

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Cambridgeshire County Council

Cambs Maths Team

Please note:

The following test uses questions from Paper 2, the 1st reasoning paper, from the 2019 SATs.

The questions have been organised from Year 3 content to Year 6 content and additional pages have been inserted to divide the paper up into sections in case teachers wish to administer the test in smaller sections and build pupil's confidence over a period of time.

Questions that require knowledge from different year groups have been placed within the section for the older year group content.

Instructions

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

Questions and answers

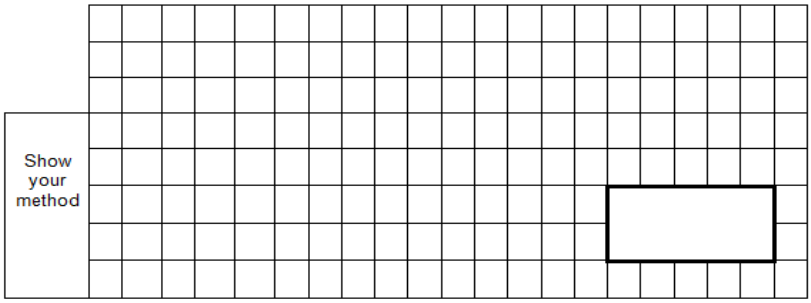
You have **40 minutes** to complete this test.

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.

Some questions have a method box like this:



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

If you cannot do one of the questions, **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

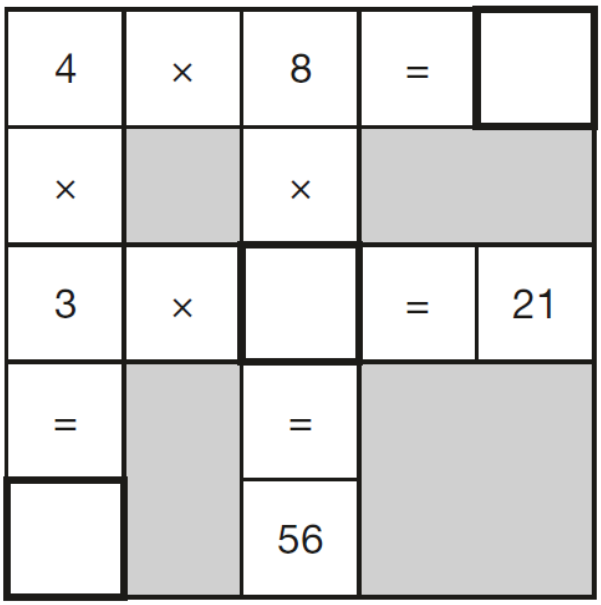
The number under each line at the side of the page tells you the number of marks available for each question.

Year 3

1.

In this grid, there are four multiplications.

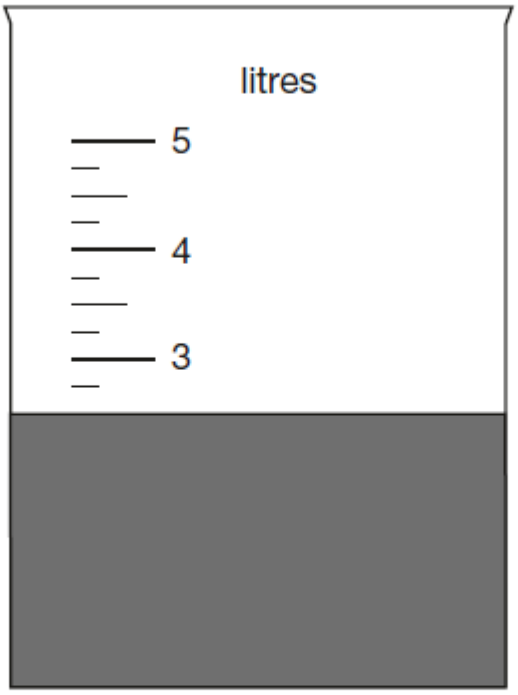
Write the **three** missing numbers.



1 mark

2.

Jack pours some dark paint into a container.



In litres, how much paint is in the container?

litres

1 mark

Year 4

3.

What number is 1,000 **less** than 9,072?

_____

1 mark

4.

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

$0.3 \div \square = 0.03$

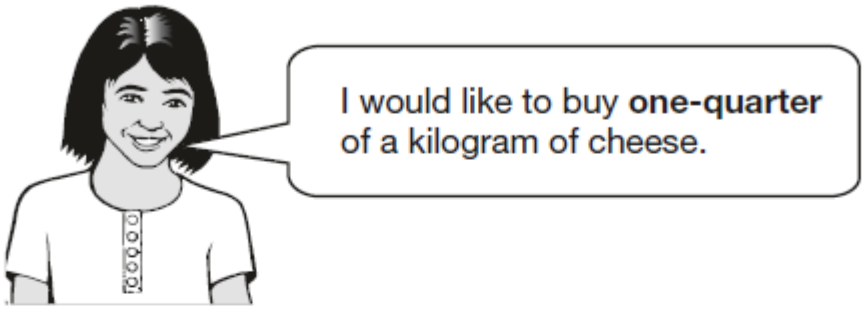
_____

1 mark

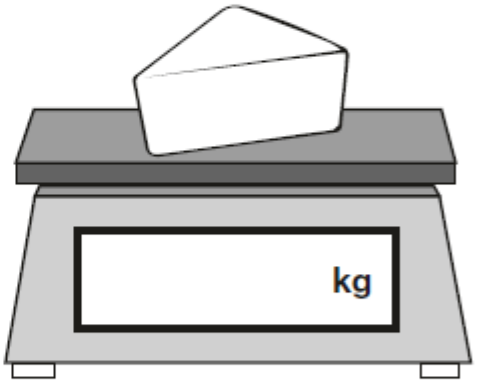
5.

Amina is shopping.

She says,



Write one-quarter on the scales as a decimal.



1 mark

The cheese costs £1.35

Amina pays with a £2 coin.

How much change should Amina get?

1 mark

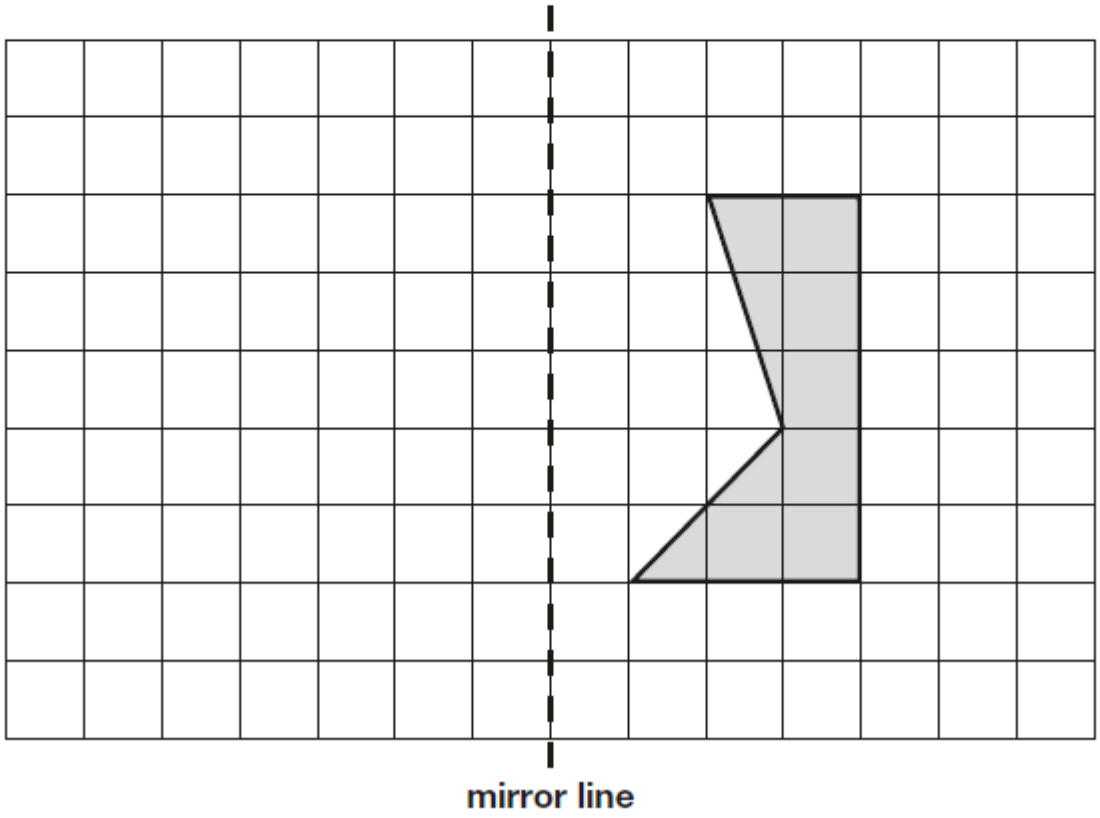
Year 5

6.

Here is a shaded shape on a square grid.

Reflect the shape in the mirror line.

Use a ruler.



1 mark

7.

Jack chose a number.

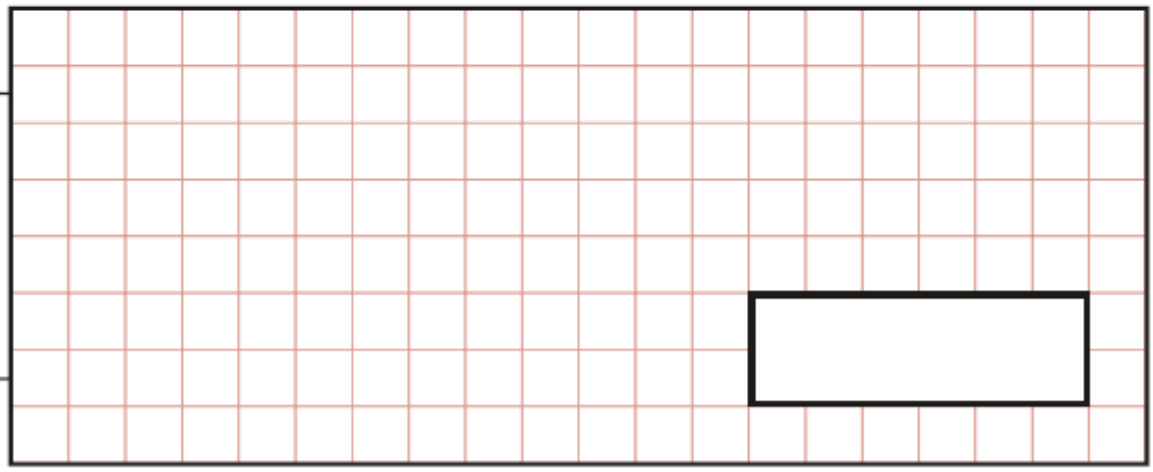
He multiplied the number by 7

Then he added 85

His answer was 953

What number did Jack choose?

Show your method



_____

2 marks

8.

Here are three symbols.

$<$ $>$ $=$

Write one symbol in each box to make the statements correct.

$\frac{7}{10}$ ☐ 0.07

$\frac{23}{1000}$ ☐ 0.23

1 mark

9.

Complete the table.

	Round 39,476
to the nearest 10,000	
to the nearest 1,000	
to the nearest 100	

1 mark

10.

Amina asked 60 children to choose their favourite flavour of jelly.

These were her results.

Flavour	Number of children
Raspberry	12
Lemon	8
Orange	15
Blackcurrant	25
Total	**60**

What **percentage** of the 60 children chose orange?

%

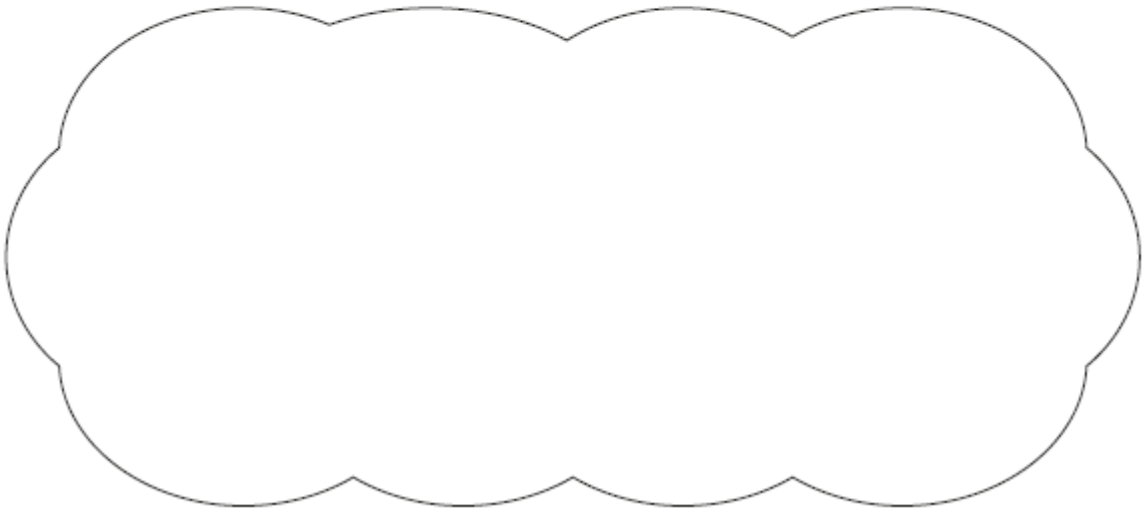
1 mark

11.

Circle the **prime** number.

95 89 87

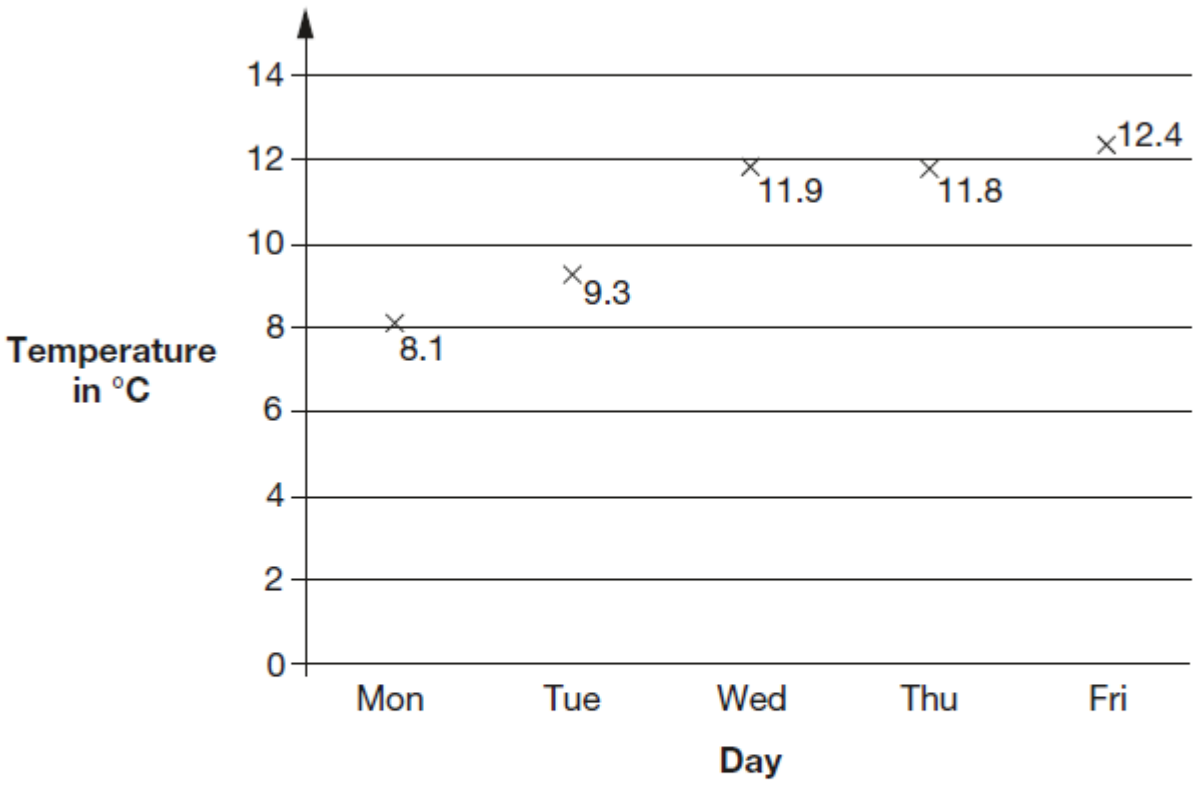
Explain how you know the other numbers are **not** prime.



1 mark

12.

This graph shows the maximum temperature for five days.



For what fraction of the five days was the maximum temperature below 10 °C?

1 mark

Year 6

13.

Order the numbers starting with the **largest**.
Match each number with its order.

1,009,909	1st	largest
1,023,065	2nd	
1,009,099	3rd	
1,230,650	4th	smallest

1 mark

14.

The numbers in this sequence **increase** by 45 each time.

Write the missing numbers.

☐ 155 200 245 ☐ ☐

1 mark

15.

In this sequence, the rule to get the next number is

Multiply by 2, and then add 3

Write the missing numbers.

	25	53	

2 marks

16.

A theme park sells tickets online.

Each ticket costs £24

There is a £3 charge for buying tickets.

Which of these shows how to calculate the total cost, in pounds?

Tick **one**.

number of tickets × 3 + 24 ☐

number of tickets × 24 + 3 ☐

number of tickets + 3 × 24 ☐

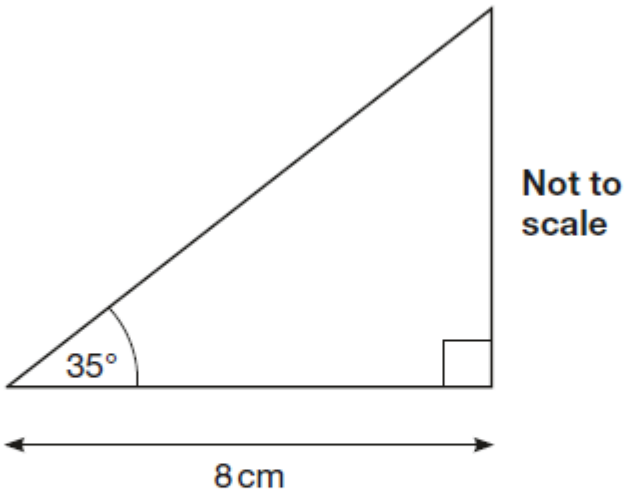
number of tickets + 24 × 3 ☐

1 mark

17.

Here is a sketch of a triangle.

It is not drawn to scale.



Not to scale

Draw the full-size triangle **accurately** below.

Use an angle measurer (protractor) and a ruler.

One line has been drawn for you.

8 cm

2 marks

18.

Write the missing number.

$$6 + 2 \times 2 - \square = 6$$

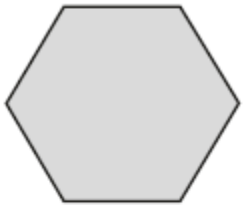
_____

1 mark

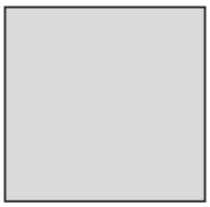
19.

These two shapes have the **same** perimeter.

regular hexagon



square



Not actual size

The length of each side of the **hexagon** is **8** centimetres.

Calculate the **area** of the **square**.

Show your method

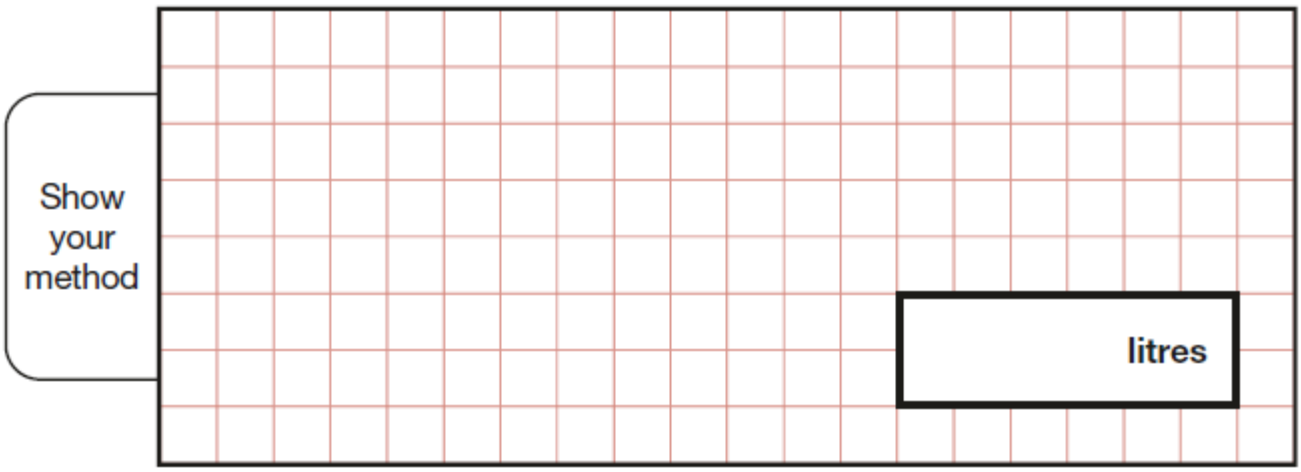
cm²

_____ 2 marks

20.

A machine pours 250 millilitres of juice every 4 seconds.

How many **litres** of juice does the machine pour every **minute**?



2 marks

21.

Tick the fractions that are **equal** to 20%.

$\frac{1}{20}$ ☐

$\frac{20}{40}$ ☐

$\frac{1}{5}$ ☐

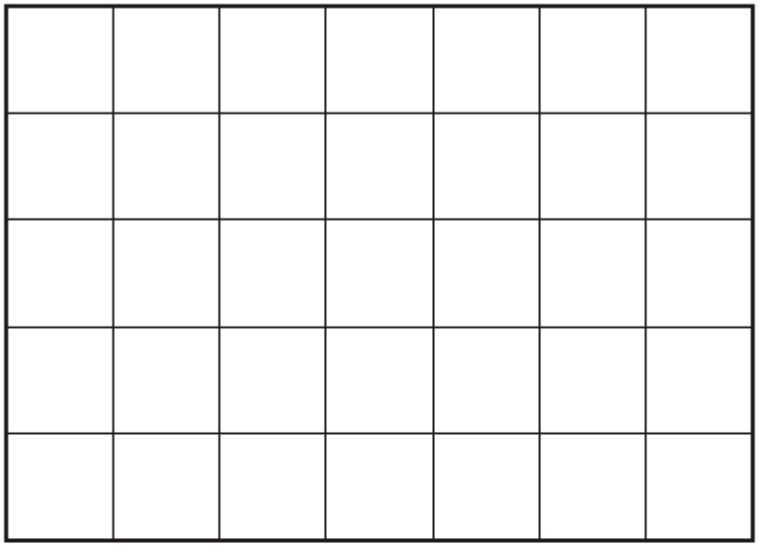
$\frac{3}{15}$ ☐

$\frac{2}{100}$ ☐

2 marks

22.

Adam has this rectangular piece of card. It is marked with grid lines.



Adam makes two straight cuts along the grid lines.

The two cuts divide the rectangle into 3 shapes:

- 2 squares of **different** size, and
- 1 rectangle.

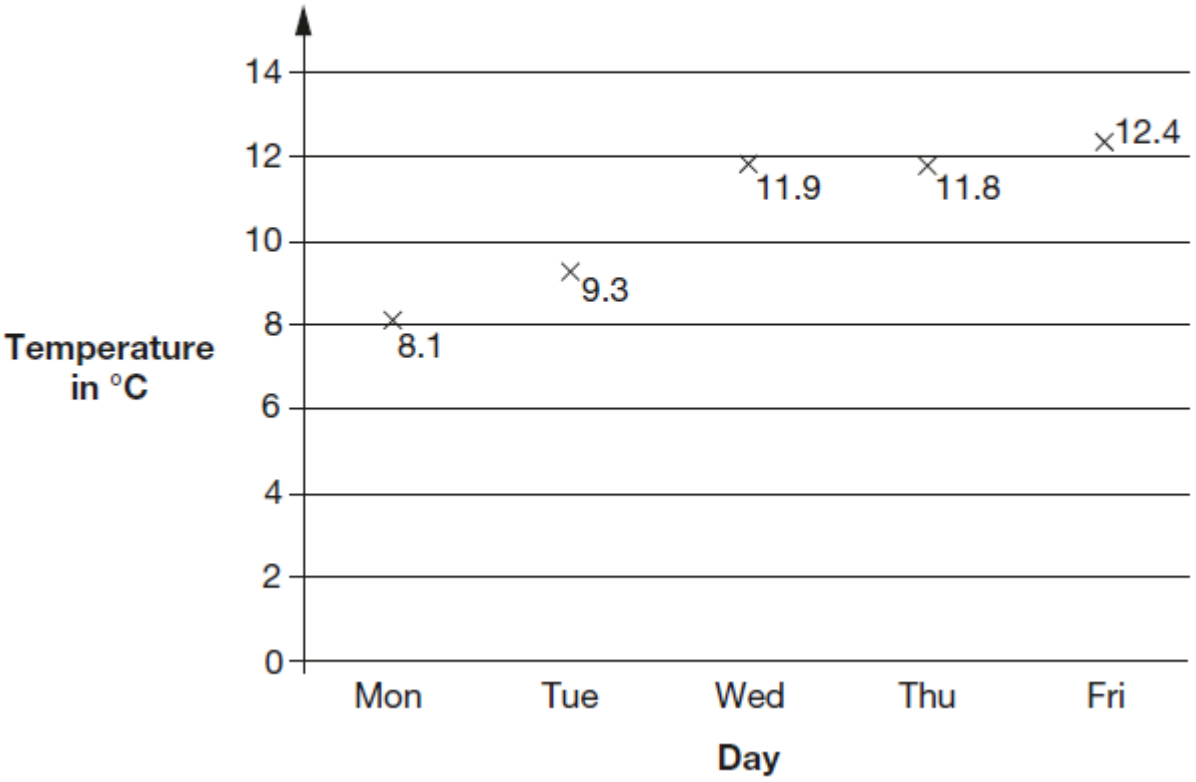
Using the grid lines, draw **two** lines that show where Adam could have made his cuts.

Use a ruler.

1 mark

23.

This graph shows the maximum temperature for five days.



What was the **mean** maximum temperature, to one decimal place?

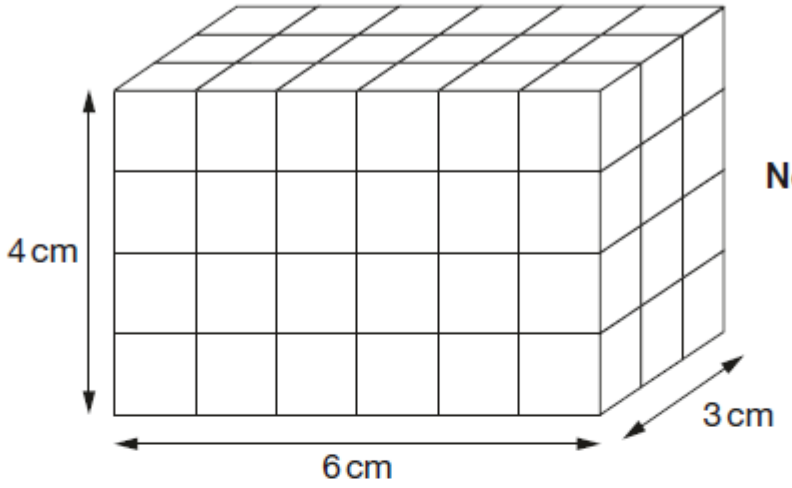
Show your method

°C

2 marks

24.

Amina made this cuboid using centimetre cubes.



Not actual size

Stefan makes a cuboid that is 5 cm longer, 5 cm taller and 5 cm wider than Amina's cuboid.

What is the **difference** between the number of cubes in Amina's and Stefan's cuboids?

Show your method

cubes

2 marks