2023 national curriculum tests

Key stage 2

Mathematics

Paper 2: reasoning

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

L 0 0 0 7 0 A 0 1 2 4

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Please do not write on this page.

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:

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

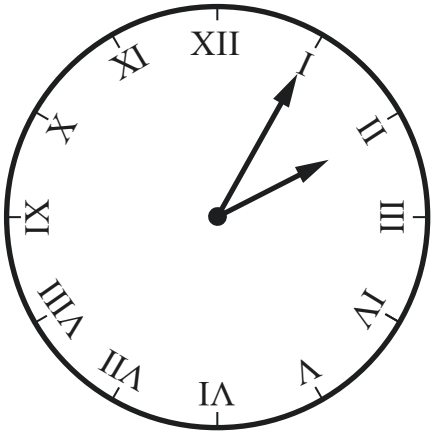
If you cannot do a question, **go on to the next one**.
You can come back to it later, if you have time.

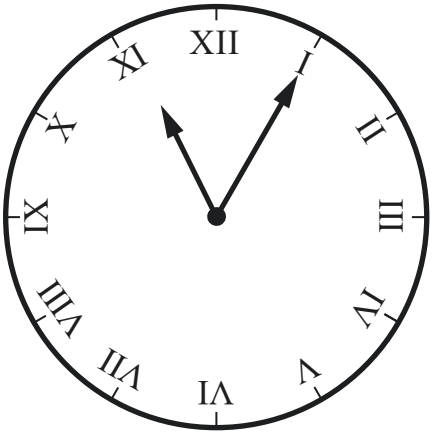
If you finish before the end, **go back and check your work**.

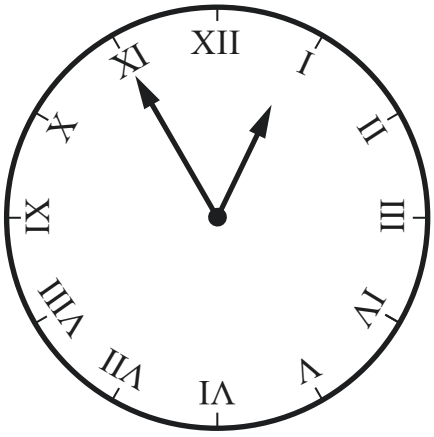
Marks

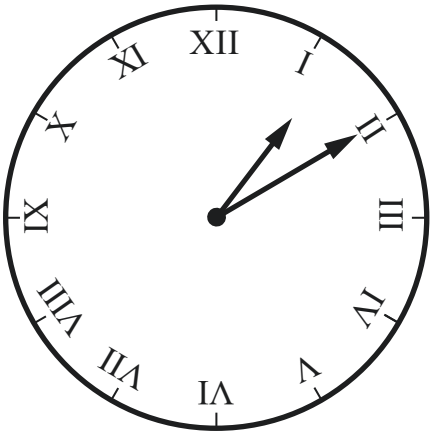
The number under each line at the side of the page tells you the number of marks available for each question.

1 Circle the clock that shows **5 minutes past 11**









1 mark

2 Write these temperatures in order, starting with the **lowest**.

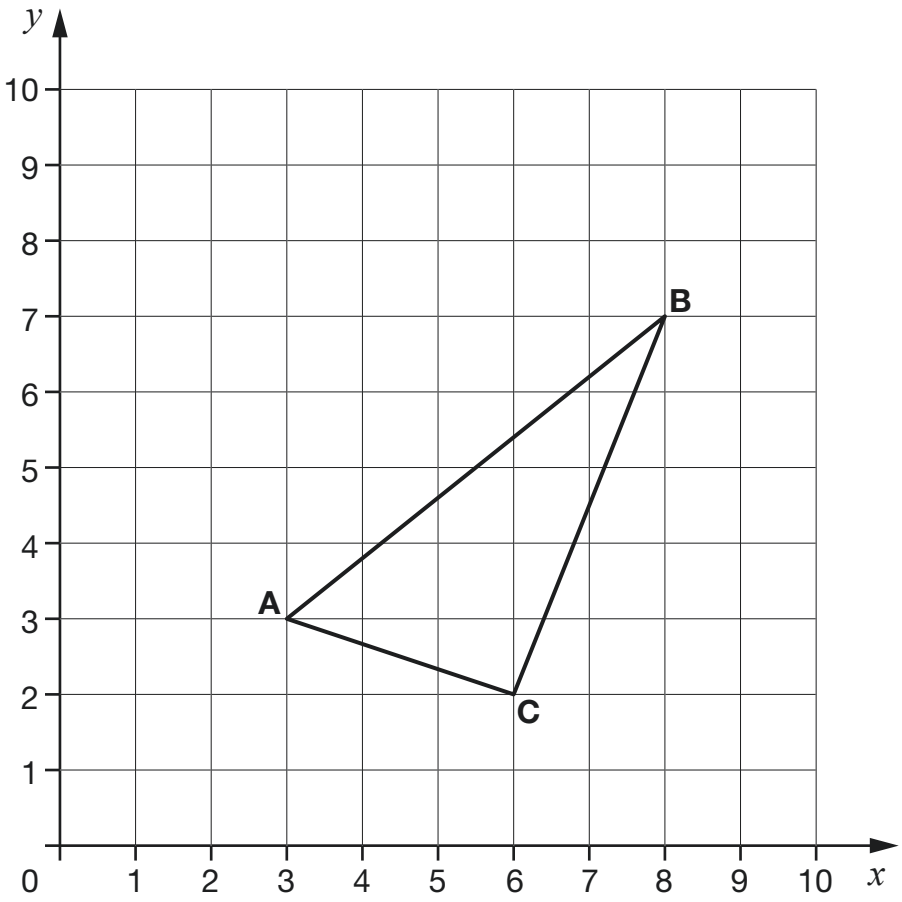
6°C −4°C 1°C −10°C 3°C

°C	°C	°C	°C	°C

lowest

1 mark

3



ABC is a triangle.

What are the coordinates of point **C**?

(,)

1 mark

4 Some children choose their favourite zoo animal.

The pictogram shows the results.

Key: ● stands for **2** children

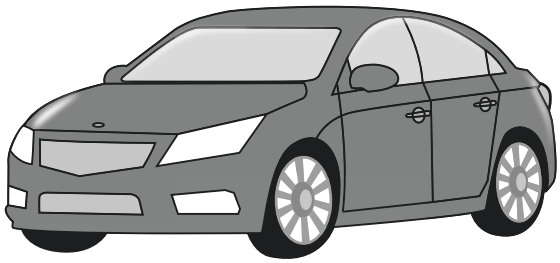
Animal	Number of children
penguin	● ● ●
elephant	● ● ◗
tiger	● ● ● ● ● ●
giraffe	● ◗

How many **more** children choose tiger than elephant?

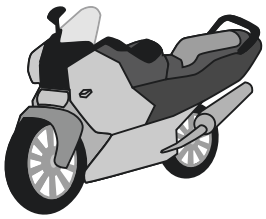
[ ]

1 mark

5 Cars and motorbikes are parked in a street.



car
4 wheels



motorbike
2 wheels

Stefan counts 3 motorbikes and 5 cars.

He counts **28 wheels** altogether.

Explain why Stefan **cannot** be correct.

1 mark

6 Kirsty buys 1 litre of apple juice for £1.39

She pays with a £5 note.

How much change does Kirsty get?

£ ____

1 mark

7 Here is a number sequence.

75 50 25 ____ ____

1 mark

Write the next two numbers in the sequence.

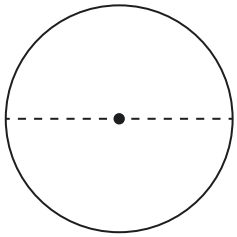
8 In 2012, there were **24,372** schools in the United Kingdom.

Round the number of schools to the **nearest hundred**.

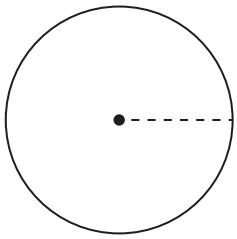
1 mark

9 Here are some diagrams showing parts of a circle.

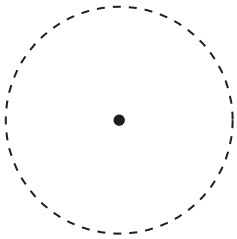
Match each diagram to the name of the dashed line.



circumference



diameter



radius

1 mark

10 Ken thinks of a number.

He divides it by 3

The answer is 72

What number was Ken thinking of?

1 mark

11 Write the number that is **one thousand more** than 19,039

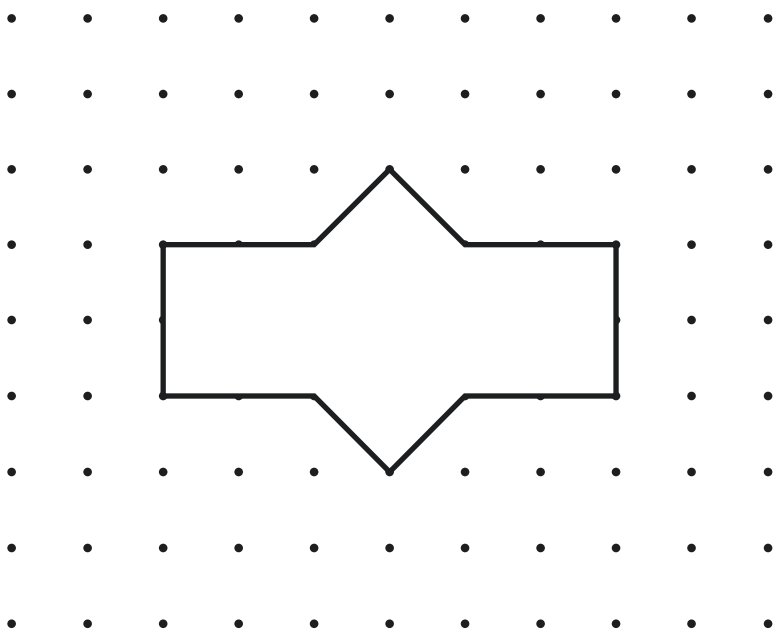
1 mark

Write the number that is **one hundred less** than 19,039

1 mark

12 Draw all the lines of symmetry on this shape.

Use a ruler.



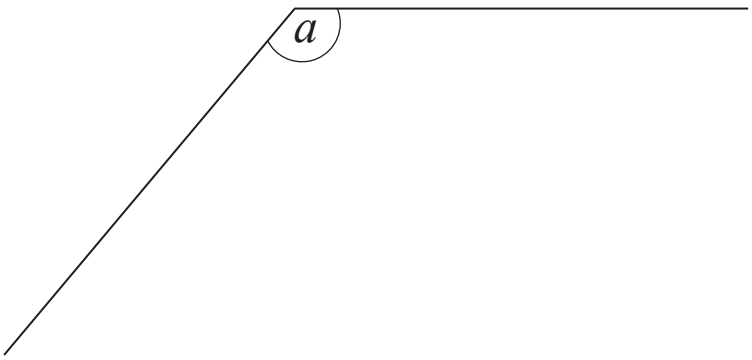
1 mark

13 $\frac{1}{5}$ of a number is 22

What is the number?

1 mark

14



Measure angle a.

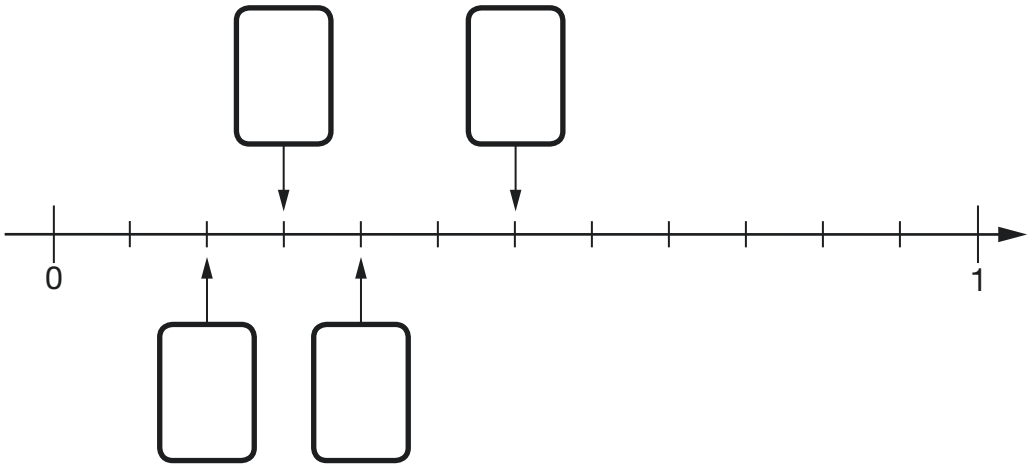
a is °

1 mark

15 Here are four fractions.

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

Write the fractions in the correct place on the number line.



1 mark

16 One day last year, the rate of rainfall from 6:30 am until 9:00 am was 2 millimetres per hour.

What was the **total** rainfall from 6:30 am until 9:00 am?

mm

1 mark

17 The manager of a flower shop orders 4 boxes of red roses.

There are 50 roses in each box.

The manager makes bunches with 6 roses in each bunch.

What is the **greatest** number of bunches that can be made?

Show your method

2 marks

18 A cinema sells tickets at three different prices.

- $\frac{1}{20}$ of the tickets are price A.
- $\frac{3}{5}$ of the tickets are price B.
- The rest of the tickets are price C.

What fraction of the tickets are price C?

Show your method

2 marks

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

$$15{,}000 \div \square = 75$$

1 mark

20 Write the two missing digits to make this **long multiplication** correct.

		□	2	3	5
×				□	3
		9	7	0	5
1	6	1	7	5	0
1	7	1	4	5	5

2 marks

21 The height of the tallest person in history is 8 feet 11 inches.

Conversion table	
One foot	30 centimetres
One inch	2.5 centimetres

Use this conversion table to calculate the height of the tallest person, in **centimetres**.

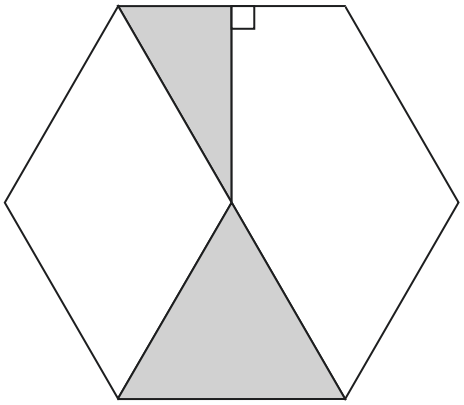
Show your method

cm

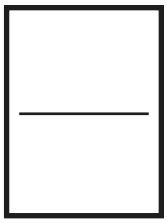
2 marks

22 Here is a regular hexagon.

The area of the large shaded triangle is double the area of the small shaded triangle.



What **fraction** of the whole hexagon is the shaded area?

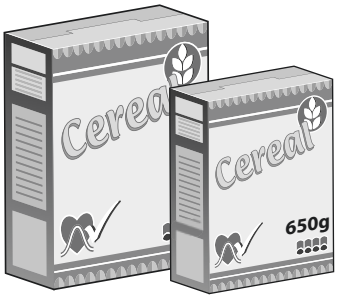


1 mark

23 A small box contains **650** grams of cereal.

A large box contains **20% more** cereal.

One portion of cereal is **40** grams.



How many **full** portions are in a **large** box?

Show your method

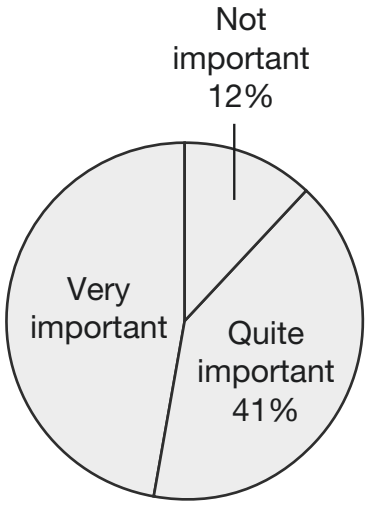
portions

2 marks

24 1,200 pupils were asked this question:

How important is it to have a break when using a screen?

This chart shows the results.



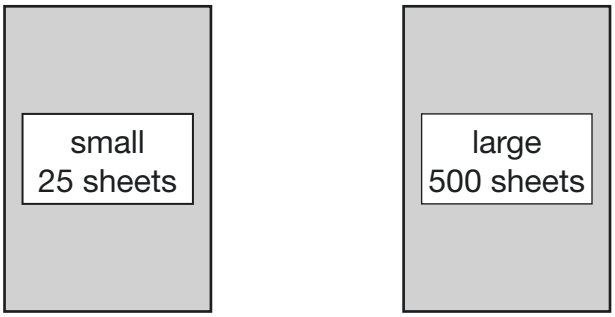
How many pupils answered 'Very important'?

pupils

1 mark

25 There are 25 sheets of paper in a small pack.

There are 500 sheets in a large pack.



How many small packs make one large pack?

1 mark

The mass of the paper in the large pack is 2.4 kilograms.

What is the mass of **one sheet** of paper, in **grams**?

Show your method

g

2 marks

26 This formula is used to estimate the mass (in kilograms) of young children.

mass = 2 × (age in years + 5)

Stefan's sister is 4 years of age.

Use the formula to estimate her mass.

kg

1 mark

The mass of Megan's brother is 16 kilograms.

Use the formula to estimate his **age**.

years

1 mark

Standards & Testing Agency

2023 key stage 2 mathematics
Paper 2: reasoning
Print version product code: STA/23/8718/p ISBN: 978-1-78957-631-3
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