

2024 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						



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## 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.

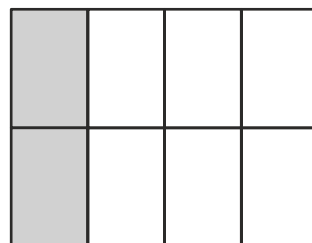
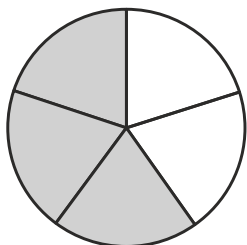
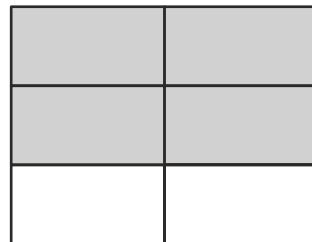
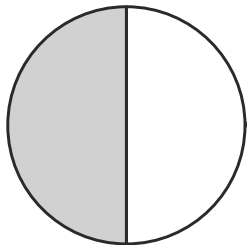
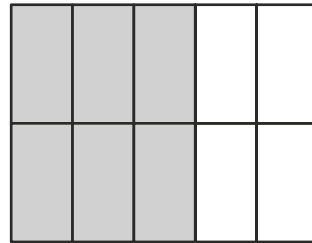
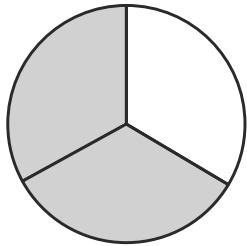
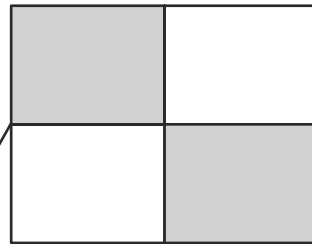
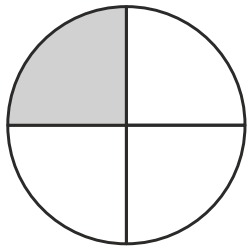


1

These shapes have a fraction shaded.

Match each shaded fraction of a circle to the same shaded fraction of a rectangle.

One has been done for you.



1 mark



2

The temperature in a freezer is  $-40^{\circ}\text{C}$ .

The temperature increases by  $10^{\circ}\text{C}$ .

What is the new temperature?

$^{\circ}\text{C}$

1 mark





4

The diameter of the Moon is 3,476 kilometres.

What is this diameter to the **nearest hundred** kilometres?

km

1 mark

5

Match each of these Roman numerals to the correct number.

One has been done for you.

CVI

1110

DXC

106

DLXXI

590

MCX

571

1 mark



6

Match each fraction to its equivalent simplified fraction.

One has been done for you.

Fraction

Simplified  
fraction

$$\frac{12}{20}$$

$$\frac{4}{5}$$

$$\frac{12}{15}$$

$$\frac{2}{3}$$

$$\frac{12}{16}$$

$$\frac{3}{5}$$

$$\frac{12}{18}$$

$$\frac{3}{4}$$

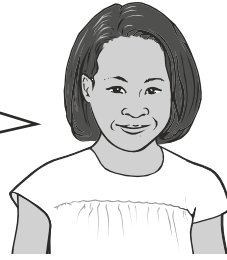
1 mark



7

Emma thinks of a number. She says,

I multiply by 2  
I add 11  
I divide by 3  
My answer is 9



What number did Emma think of?

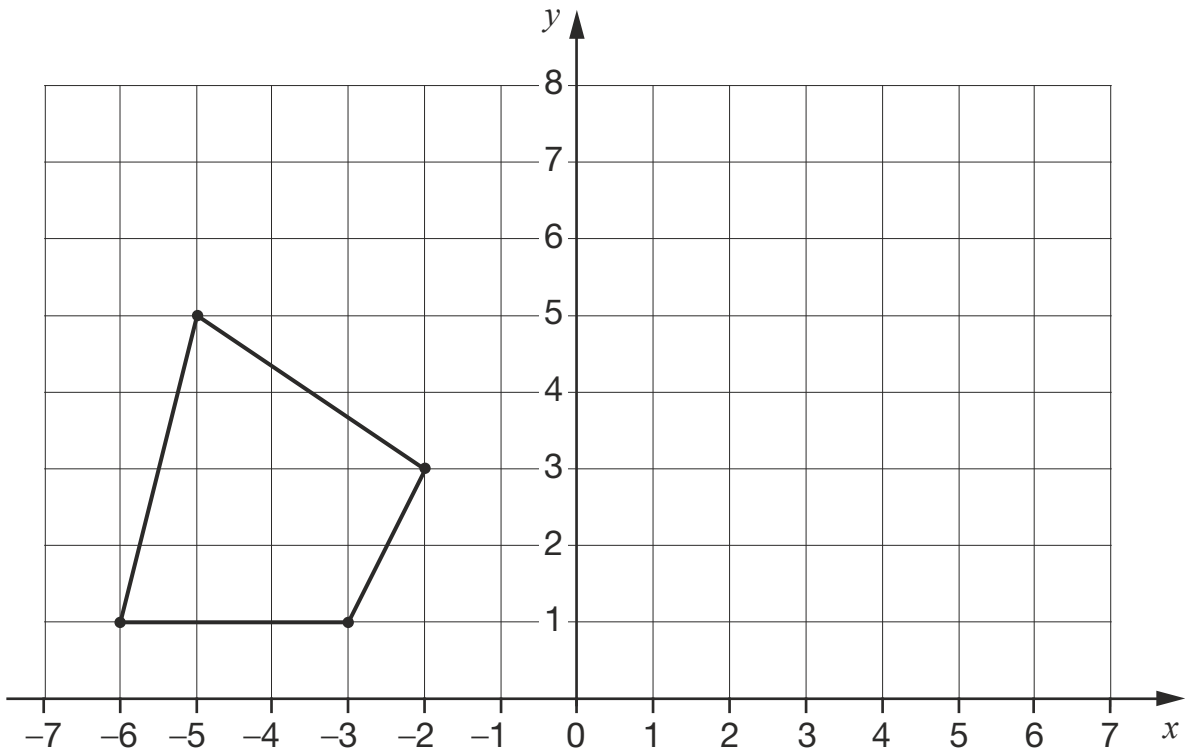
1 mark



8

Here is a shape.

Draw the shape after it is translated 8 units to the right.



1 mark

Use a ruler.

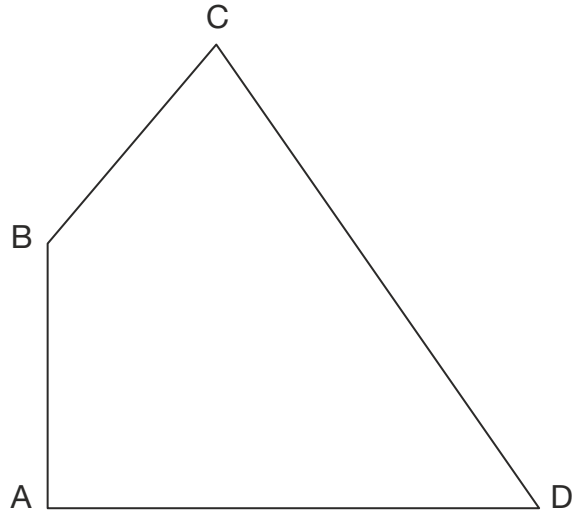


**9**

Write the missing numbers in the table.

Number of weeks	Number of days
1	7
2	14
4	28
6	
10	
	105

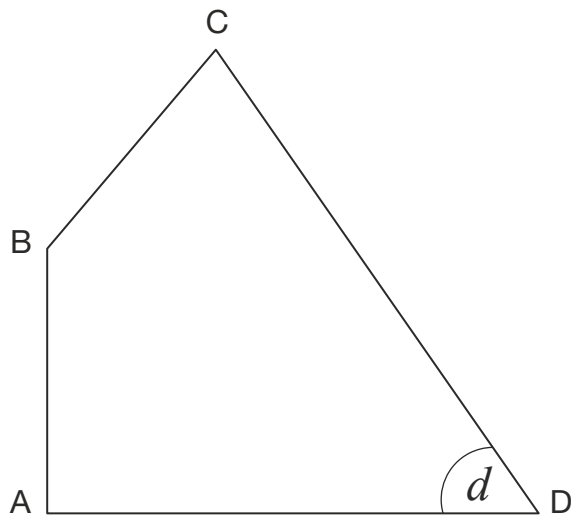
1 mark



What is the perimeter of the shape, **in millimetres**?

Use a ruler.

1 mark



Measure the size of angle  $d$ .

Use an angle measurer.

$d$  is

1 mark



11

Write the missing digits to make this **subtraction** correct.

$$\begin{array}{r} 57\boxed{\phantom{0}} \\ - 3\boxed{\phantom{0}}5 \\ \hline \boxed{\phantom{0}}68 \end{array}$$

2 marks

12

Here are four fractions.

$$\frac{7}{8}$$

$$\frac{1}{5}$$

$$\frac{3}{4}$$

$$\frac{8}{10}$$

Write the fractions in order starting with the least.

least

1 mark





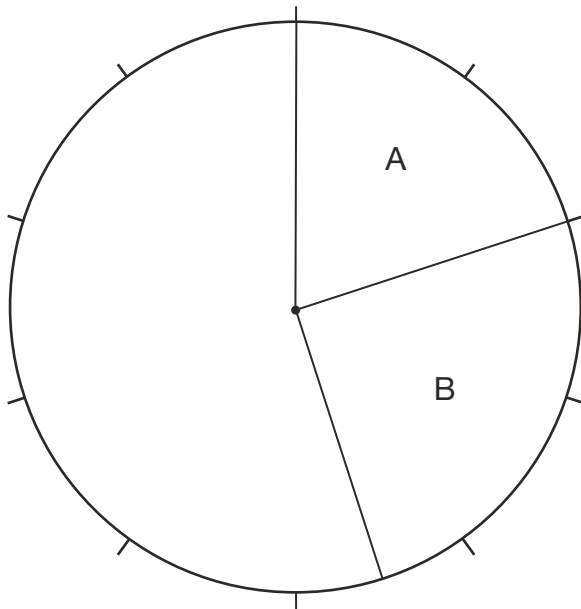
14

Look at the data in this table.

Label	Percentage
A	20%
B	25%
C	15%
D	30%
E	10%

Using this data, draw **two** lines and write **three** labels to complete the pie chart.

Use a ruler.



2 marks



15

35% of the 680 pupils at a school have a pet dog.

159 of the pupils who have a pet dog are boys.

How many of the pupils who have a pet dog are girls?

Show  
your  
method

The grid is 20 units wide and 10 units high. A smaller box, 10 units wide and 2 units high, is located in the bottom right corner of the grid.

2 marks



16

Write a number in the box to make this correct.

$$\frac{3}{5} < \frac{\square}{100} < 0.7$$

1 mark

17

Tick the numbers that are factors of both 54 **and** 72

2

3

4

8

9

1 mark





19

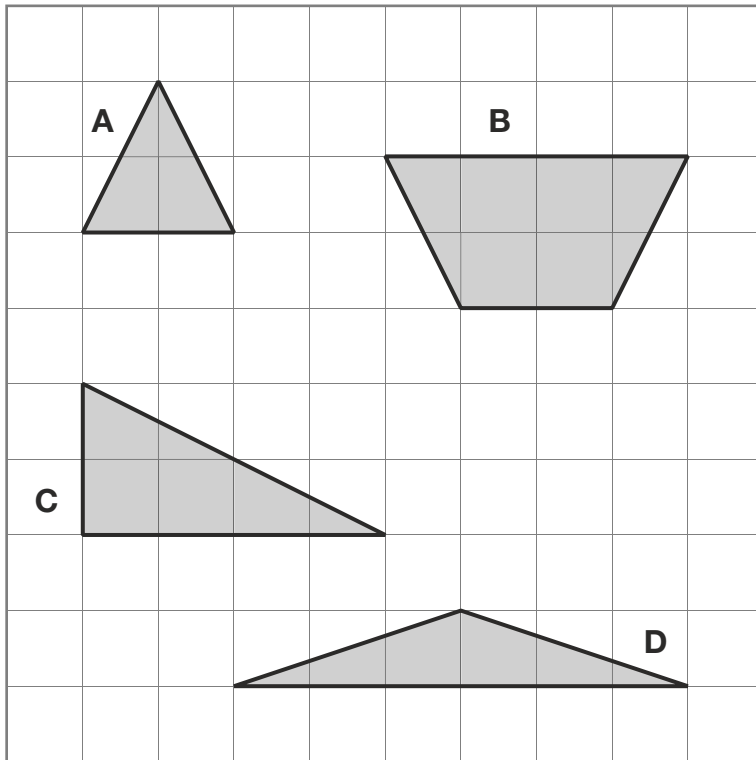
Complete this division.

$$\begin{array}{r}
 \square 64 \text{ r}1 \\
 12 \overline{) 436 \square}
 \end{array}$$

2 marks

20

Here are four shapes on a grid.



Write the letters of **all** the shapes that have **only two** acute angles.

\_\_\_\_\_ 1 mark



21

A band holds a concert for charity.

The tickets cost £27 each.

They sell 635 tickets.

They pay £3,180 to use the hall.

They give one-third of the **remaining** amount to charity.

How much money does the band give to charity?

Show  
your  
method

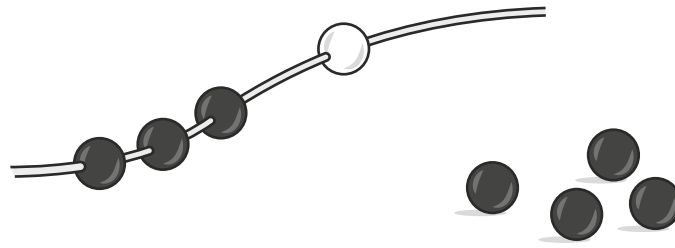
£

3 marks



22

Sarah makes jewellery using black and white beads.



She uses this rule to work out how many black beads to use.

$$\text{black} = (\text{white} \times 3) + 4$$

Sarah uses 12 **white** beads to make a necklace.

How many black beads does she use?

1 mark

Sarah uses 25 **black** beads to make a bracelet.

How many white beads does she use?

1 mark



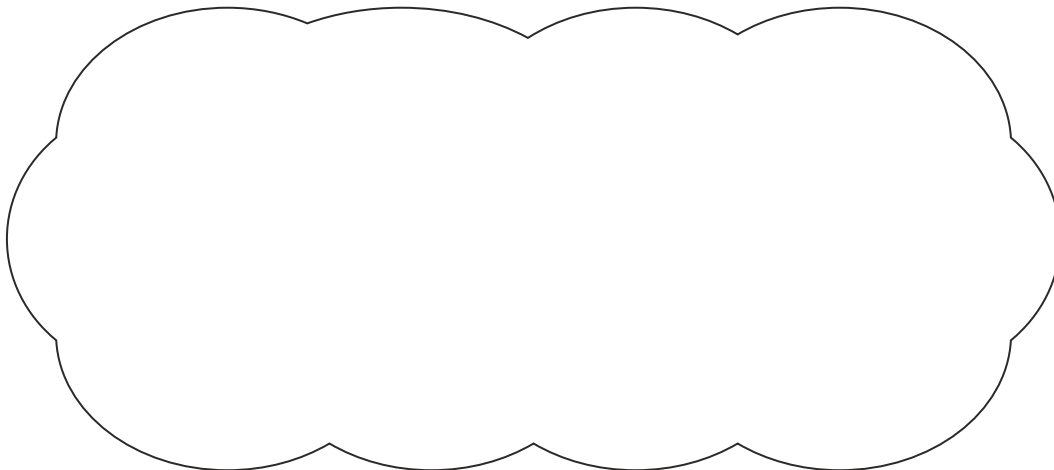
**23**

Complete the table.

Name of 3-D shape	Number of faces
cube	
pentagonal prism	
triangular-based pyramid	

1 mark**24** $\frac{1}{2} \times \frac{5}{6}$  is greater than the value of  $\frac{1}{3} \times \frac{7}{8}$ 

Explain how you know.

1 mark

**[END OF TEST]**

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2024 key stage 2 mathematics

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