

2018 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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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:**

Show  
your  
method

The diagram shows a large rectangular grid with a smaller, empty rectangular box in the bottom right corner. A bracket on the left side of the grid is labeled '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 number of marks available for each question.



G 0 0 0 8 0 A 0 3 2 4

1

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

Write the missing numbers.

42

49

63

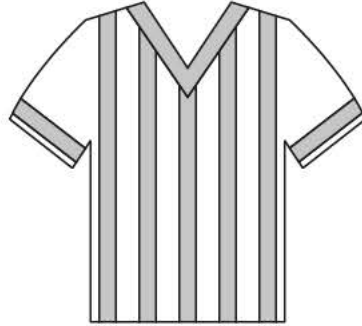
2 marks



2

Adam chooses the colours for a new team shirt.

The shirt has **two** colours.



There are four colours to choose from: **yellow, blue, white** and **red**.

Write the **two** missing combinations.

The shirt could be:

- yellow and blue
- yellow and white
- yellow and red
- blue and white.

\_\_\_\_\_ and \_\_\_\_\_

\_\_\_\_\_ and \_\_\_\_\_

1 mark



3

Here are four number cards.



Layla uses each card once to make a four-digit number.

She places:

- 4 in the tens column
- 2 so that it has a higher value than any of the other digits
- the remaining two digits so that 7 has the higher value.

Write a digit in each box to show Layla's number.

--	--	--	--

1 mark



4

Write the three missing digits to make this **addition** correct.

$$\begin{array}{r} \boxed{5} \boxed{3} \boxed{2} \boxed{\phantom{0}} \boxed{9} \\ + \quad \boxed{7} \boxed{4} \boxed{2} \boxed{\phantom{0}} \\ \hline \boxed{\phantom{0}} \boxed{0} \boxed{6} \boxed{7} \boxed{6} \end{array}$$

2 marks

5

Tick the numbers that are common factors of both **12** and **18**

2

3

6

9

12

2 marks

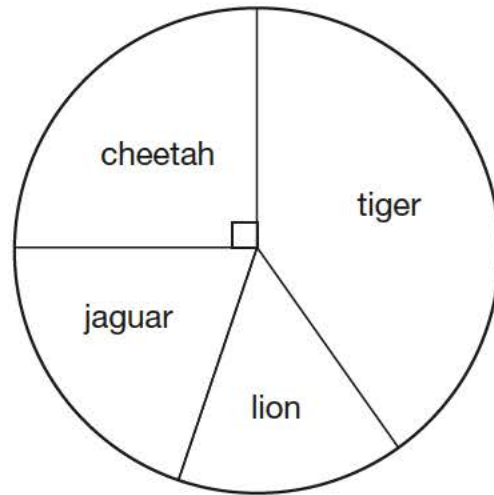


G 0 0 0 8 0 A 0 7 2 4

6

This chart shows the number of different types of big cat in a zoo.

There are **20** big cats in the zoo altogether.



Here are some statements about the chart.

Tick the statements that are **true**.

There are more cheetahs than jaguars.

The total number of lions and tigers is 10

One-quarter of the big cats are cheetahs.

There are more than 5 jaguars.

2 marks

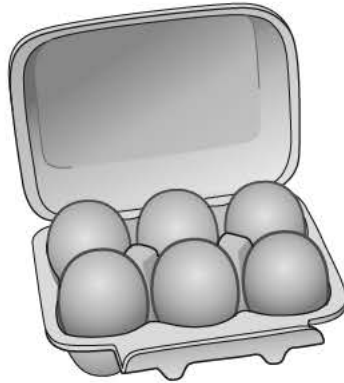




7

A farmer is packing eggs.

Each box holds **six** eggs.



The farmer has 980 eggs to pack.

How many boxes can the farmer **fill** using 980 eggs?

full boxes

1 mark

How many eggs will be left over?

left over

1 mark



G 0 0 0 8 0 A 0 9 2 4

8

Jack has £400

He spends **35%** of his money on a new bike.



How much does Jack spend on his new bike?

£

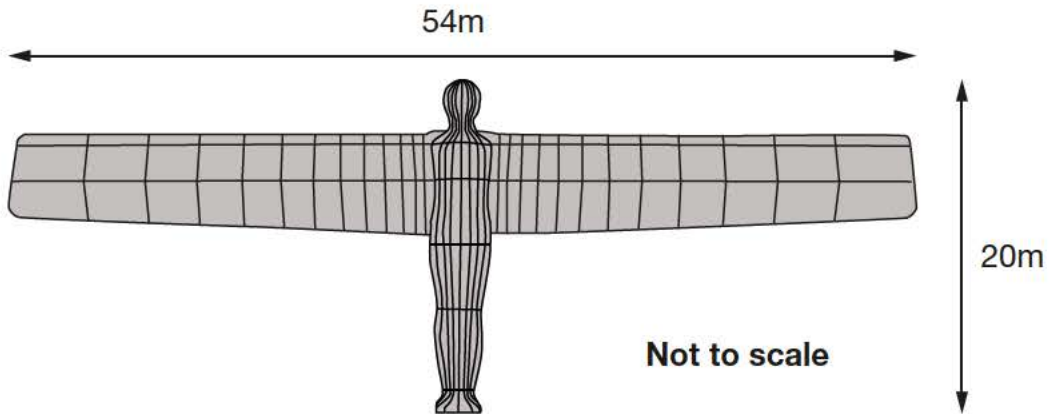
1 mark



9

The Angel of the North is a large statue in England.

It is 20 metres tall and 54 metres wide.



Ally makes a scale model of the Angel of the North.

Her model is 40 centimetres tall.

How **wide** is her model?

cm

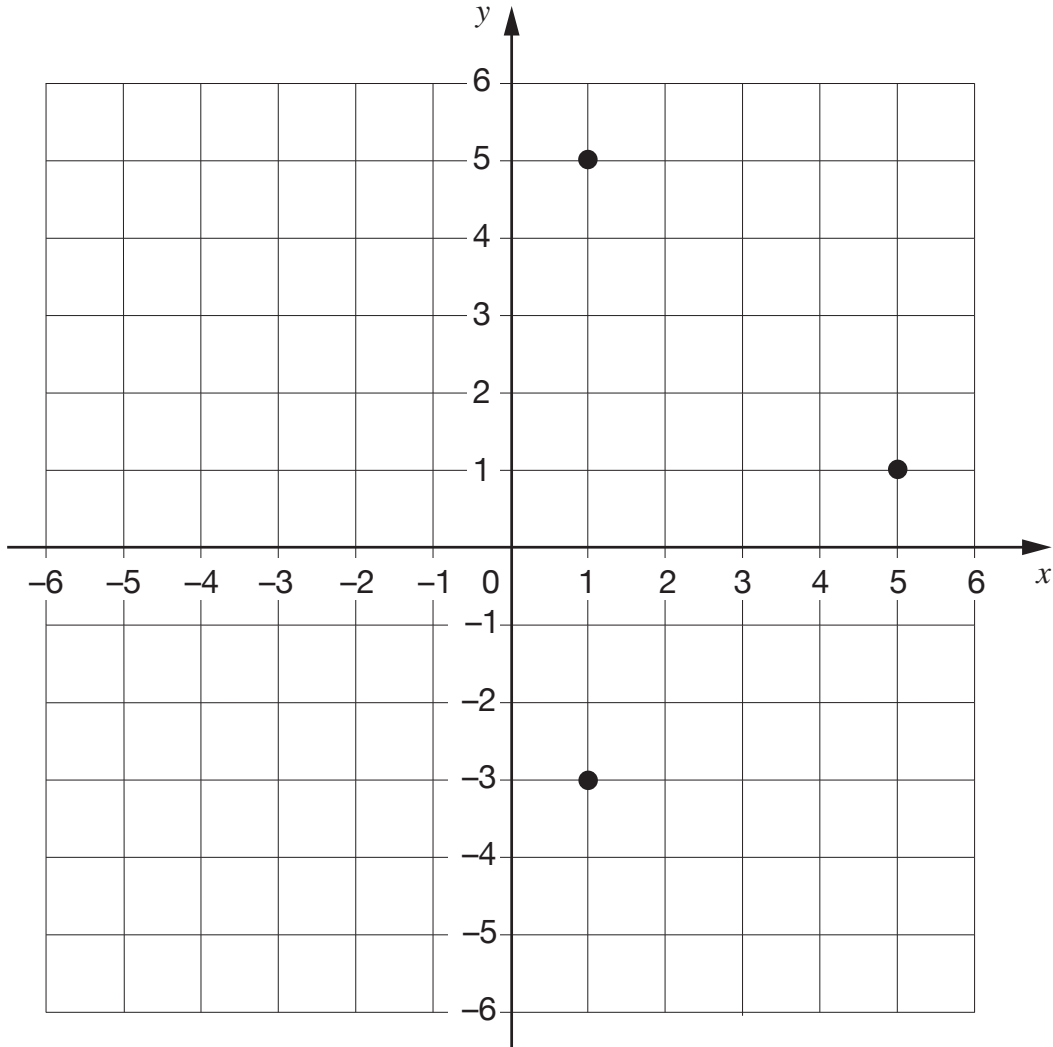
1 mark



10

Layla draws a **square** on this coordinate grid.

Three of the vertices are marked.



What are the coordinates of the missing vertex?

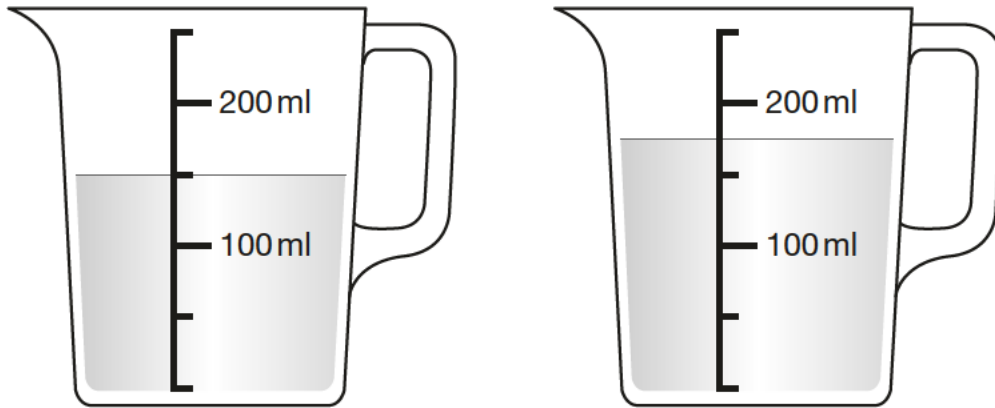
1 mark



11

Stefan has **600 millilitres** of water in a bottle.

He pours some of the water into two measuring jugs as shown.



How many millilitres of water are left in Stefan's bottle?

Show  
your  
method

	<div style="border: 1px solid black; width: 200px; height: 40px; margin: auto; display: flex; align-items: center; justify-content: center;"><span>ml</span></div>
--	--------------------------------------------------------------------------------------------------------------------------------------------------------------------

2 marks



G 0 0 0 8 0 A 0 1 3 2 4

**12**

This table shows the areas of the United Kingdom and Jamaica.

Country	Area (square kilometres)
United Kingdom	240,000
Jamaica	10,000

The area of the United Kingdom is larger than the area of Jamaica.

How many times larger is the United Kingdom?

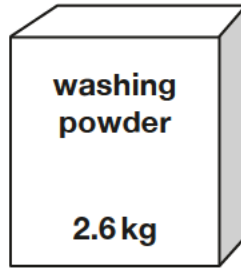
**times larger**

1 mark



13

A box contains 2.6 kg of washing powder.

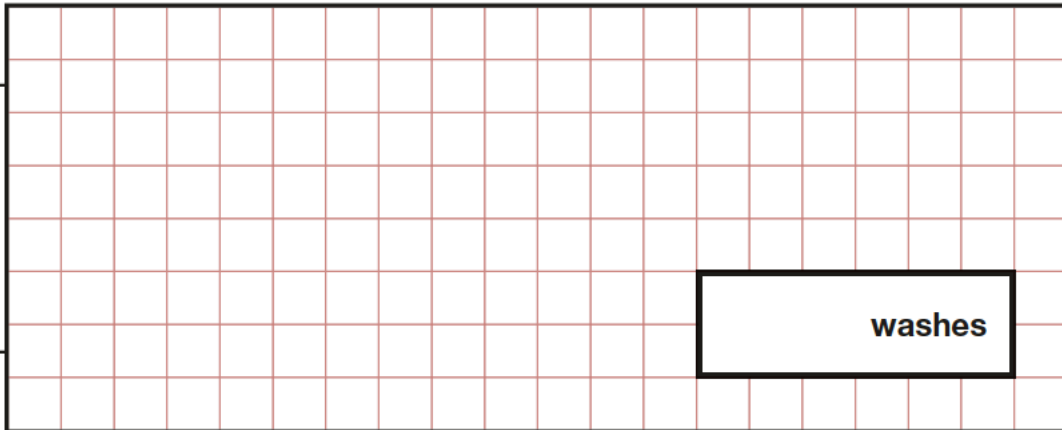


Jack uses 65 grams of powder for each wash.

He uses all the powder.

How many washes did Jack do?

Show  
your  
method



2 marks



G 0 0 0 8 0 A 0 1 5 2 4

14

Two of the angles in a triangle are  $70^\circ$  and  $40^\circ$

Jack says,

The triangle is equilateral.



Explain why Jack is **not** correct.

A large, empty, cloud-shaped box with a scalloped border, intended for the student to write their explanation.

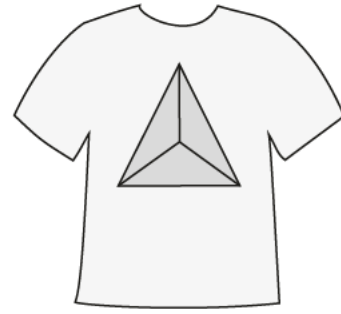
1 mark





15

A shop prints designs on T-shirts.



They use this formula to work out the price for printing a design.

$$\text{price} = 60\text{p} \times \text{number of colours} + \text{£}1.25$$

What is the price for printing a design that has **3** colours in it?

£

1 mark

Amina has **£5** to spend on printing a design.

What is the greatest number of **colours** she can have in the design?

Show  
your  
method

colours

2 marks



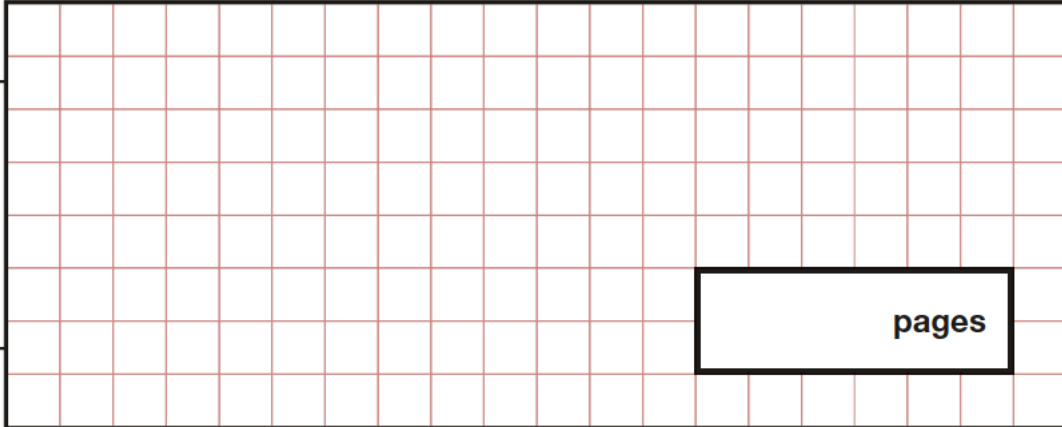
16

A book has 276 pages.

Amina has read  $\frac{1}{3}$  of the book.

How many pages are **left** for Amina to read?

Show  
your  
method



pages

2 marks

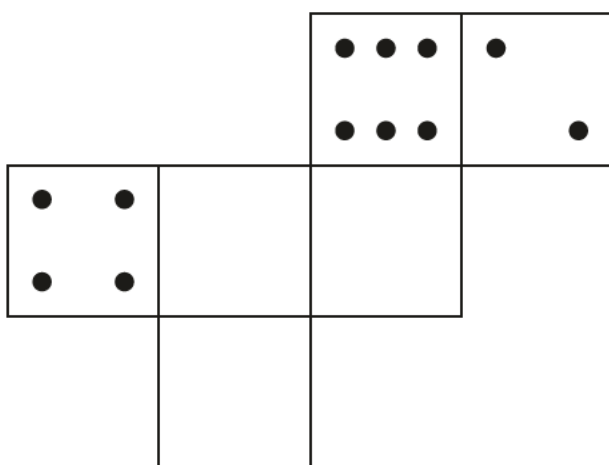


17

On a dice, the sum of the dots on opposite faces is always 7



Draw dots on the three empty faces of the net so that it could fold up to make a dice.



1 mark

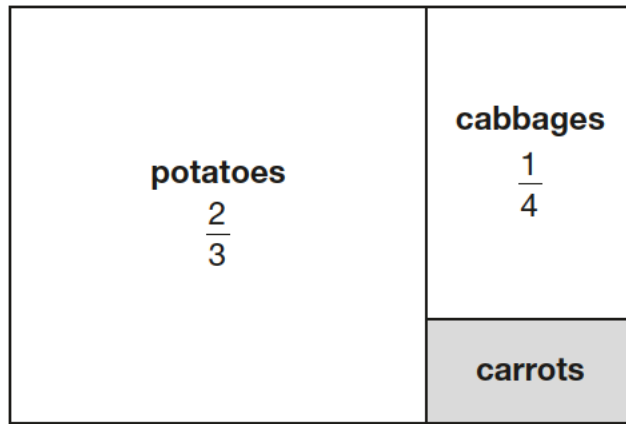


G 0 0 0 8 0 A 0 1 9 2 4

18

This is a diagram of a vegetable garden.

It shows the fractions of the garden planted with potatoes and cabbages.



Not to scale

The remaining area is planted with carrots.

What **fraction** of the garden is planted with carrots?

Show your method

2 marks



19

$$33,630 = 354 \times 95$$

Use this multiplication to complete the calculations below.

$$354 \times 9.5 = \boxed{\phantom{00000}}$$

$$3,540 \times 95 = \boxed{\phantom{0000000}}$$

$$3,363 \div 95 = \boxed{\phantom{00000}}$$

2 marks



20

In March, Ken collects 2, 3 or 4 eggs each day from his hens.

In the first 20 days, Ken collects 57 eggs altogether.

There are 31 days in March.

What is the **greatest** number of eggs Ken can collect in March?

Show  
your  
method

The grid is a 10x20 grid of squares. A small rectangular box is drawn on the grid, spanning 4 squares horizontally and 2 squares vertically. The word "eggs" is written inside this box. The box is positioned in the lower right quadrant of the grid, starting from the 7th vertical line and the 8th horizontal line from the top-left corner.

2 marks



21

Jack finished a sponsored run in 53 minutes 25 seconds.

Ally finished 3 minutes 50 seconds **after** Jack.

How long did Ally take?

min	sec
-----	-----

1 mark

Layla finished the run 8 minutes 45 seconds **before** Jack.

How long did Layla take?

min	sec
-----	-----

1 mark





2018 key stage 2 mathematics

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G 0 0 0 8 0 A 0 2 4 2 4