

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						



**[BLANK PAGE]**

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**

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

Write the missing numbers.

42

49

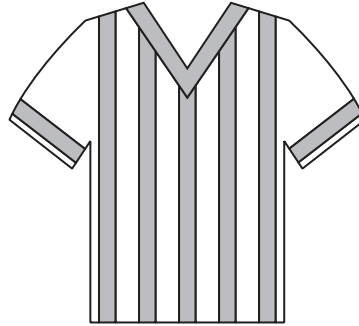
63

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 \_\_\_\_\_

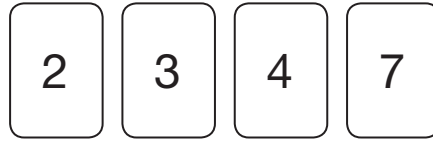
\_\_\_\_\_ and \_\_\_\_\_

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 

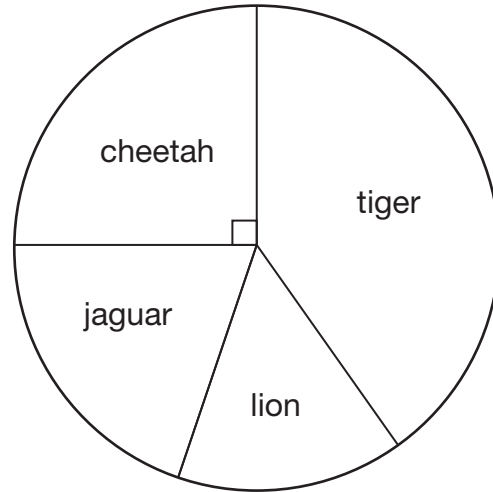
2 marks



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

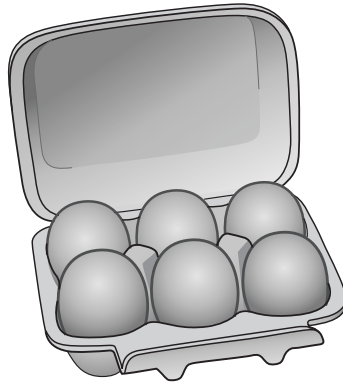




**7**

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?

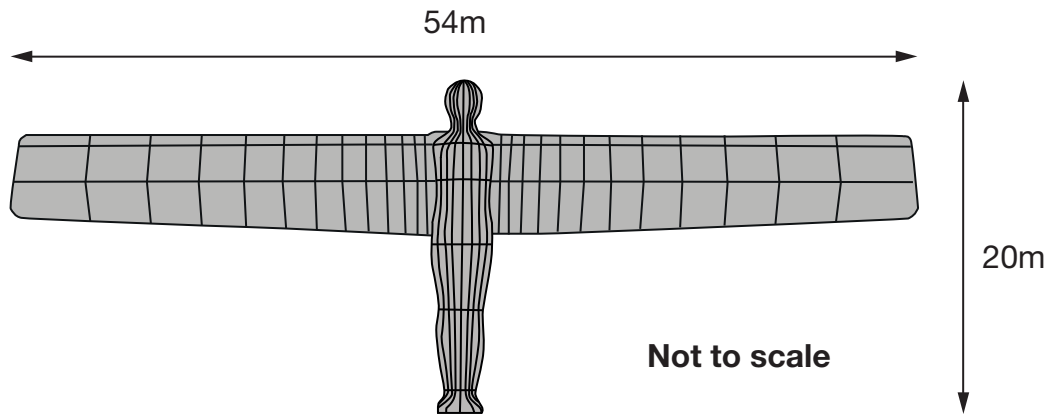
1 mark



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?

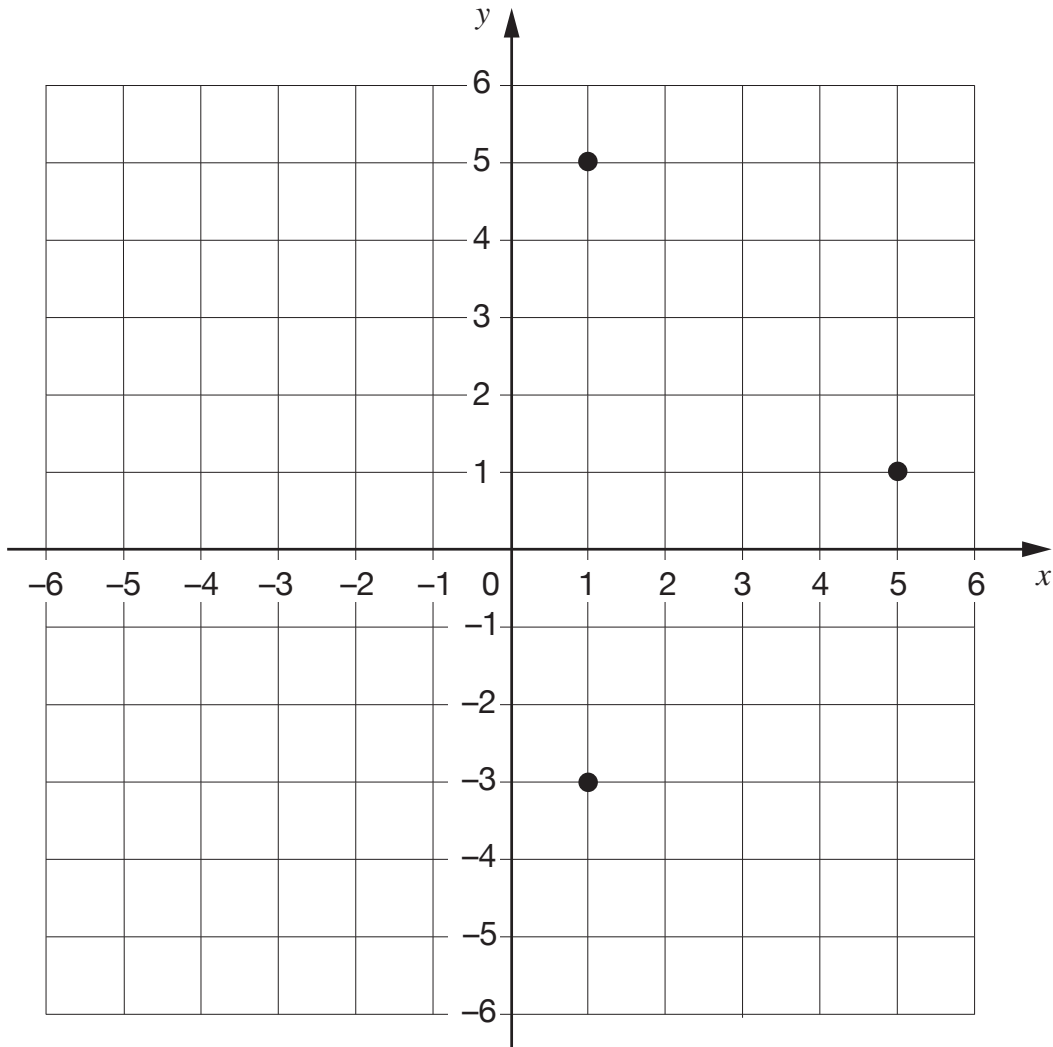
1 mark



10

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

Three of the vertices are marked.



What are the coordinates of the missing vertex?

(     ,     )

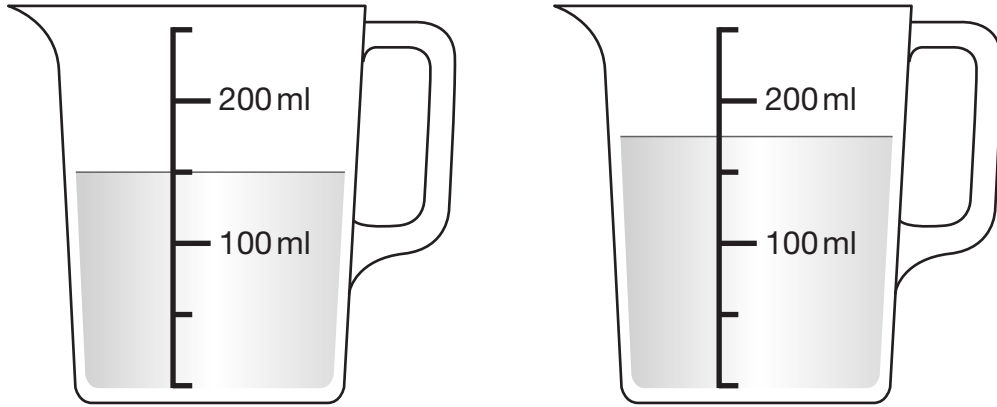
1 mark



**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

ml

2 marks



**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?

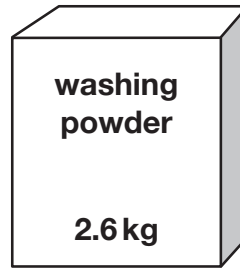
**times larger**

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

A large rectangular grid with a red border and a light red grid pattern. The grid is 20 units wide and 10 units high. A small rectangular box is drawn on the grid, containing the word "washes". The box is positioned approximately 15 units from the left and 4 units from the bottom of the grid.

washes

2 marks



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.

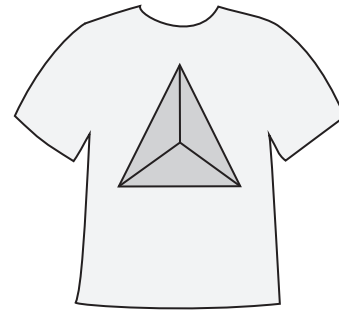
1 mark





**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

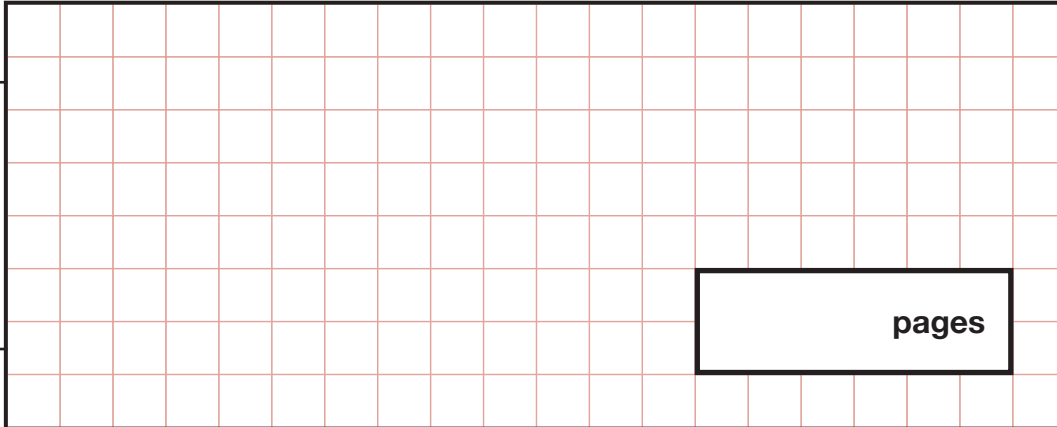
colours

2 marks



**16**

A book has 276 pages.

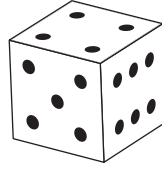
Amina has read  $\frac{1}{3}$  of the book.How many pages are **left** for Amina to read?Show  
your  
method

A large grid for showing the method to solve the problem. A small box labeled "pages" is provided for the final answer.

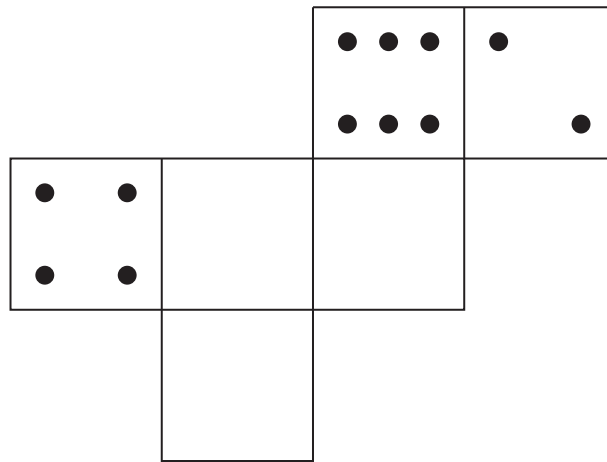
          
2 marks

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.



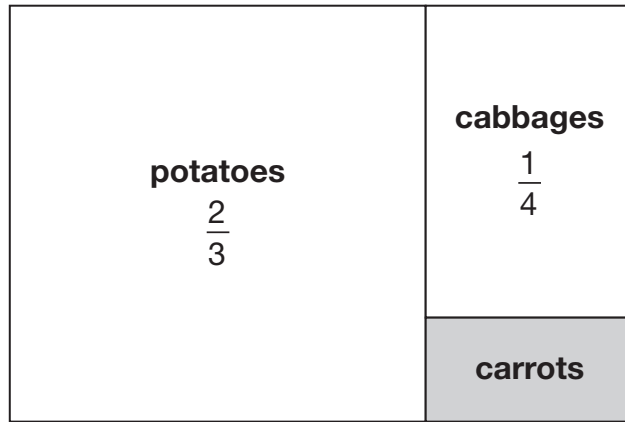
1 mark



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 20 columns wide and 10 rows high. A small rectangular box labeled "eggs" is positioned on the grid, spanning 4 columns and 2 rows, starting from the 16th column and 6th row.

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?

1 mark

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

How long did Layla take?

1 mark





Standards  
& Testing  
Agency

2018 key stage 2 mathematics

Paper 3: reasoning

Print version product code: STA/18/7975/p ISBN: 978-1-78644-628-2

Electronic PDF version product code: STA/18/7975/e ISBN: 978-1-78644-648-0

### For more copies

Additional printed copies of this booklet are not available. It can be downloaded from [www.gov.uk/government/publications](http://www.gov.uk/government/publications).

© Crown copyright 2018

### Re-use of Crown copyright in test materials

Subject to the exceptions listed below, the test materials on this website are Crown copyright and you may re-use them (not including logos) free of charge in any format or medium in accordance with the terms of the Open Government Licence v3.0 which can be found on the National Archives website and accessed via the following link: [www.nationalarchives.gov.uk/doc/open-government-licence](http://www.nationalarchives.gov.uk/doc/open-government-licence). When you use this information under the Open Government Licence v3.0, you should include the following attribution: 'Contains material developed by the Standards and Testing Agency for 2018 national curriculum assessments and licensed under Open Government Licence v3.0' and where possible provide a link to the licence.



### Exceptions – third-party copyright content in test materials

You must obtain permission from the relevant copyright owners, as listed in the '2018 key stage 2 tests copyright report', for re-use of any third-party copyright content which we have identified in the test materials, as listed below. Alternatively, you should remove the unlicensed third-party copyright content and/or replace it with appropriately licensed material.

### Third-party content

These materials contain no third-party copyright content.

If you have any queries regarding these test materials, contact the national curriculum assessments helpline on 0300 303 3013 or email [assessments@education.gov.uk](mailto:assessments@education.gov.uk).

