

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:

Diagram illustrating a method box. The box is a grid of 20 columns and 10 rows. On the left side, there is a label "Show your method" pointing to the grid. On the right side, there is a smaller, empty rectangular box for an answer.

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

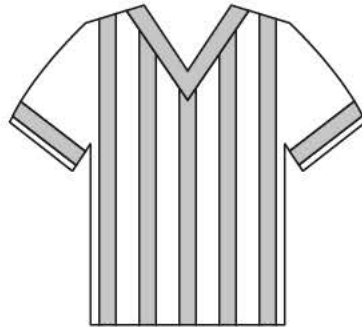
2 marks



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.

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

2 marks

5

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

2

3

6

9

12

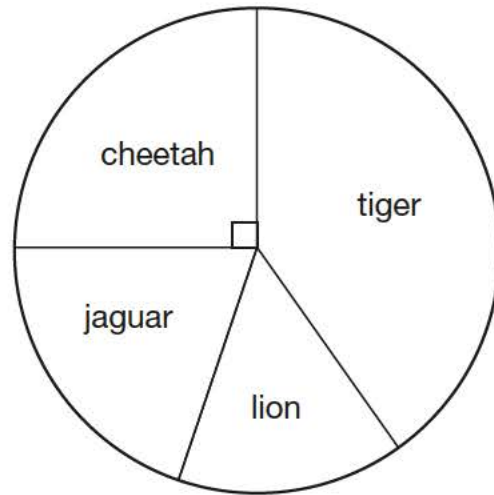
2 marks



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.

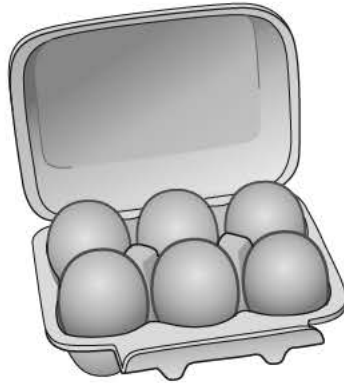
2 marks



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



8

Jack has £400

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



How much does Jack spend on his new bike?

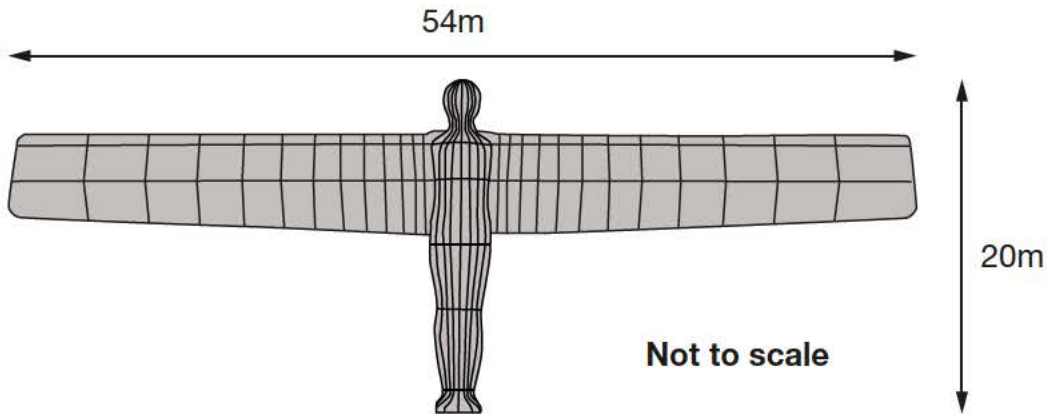
£

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?

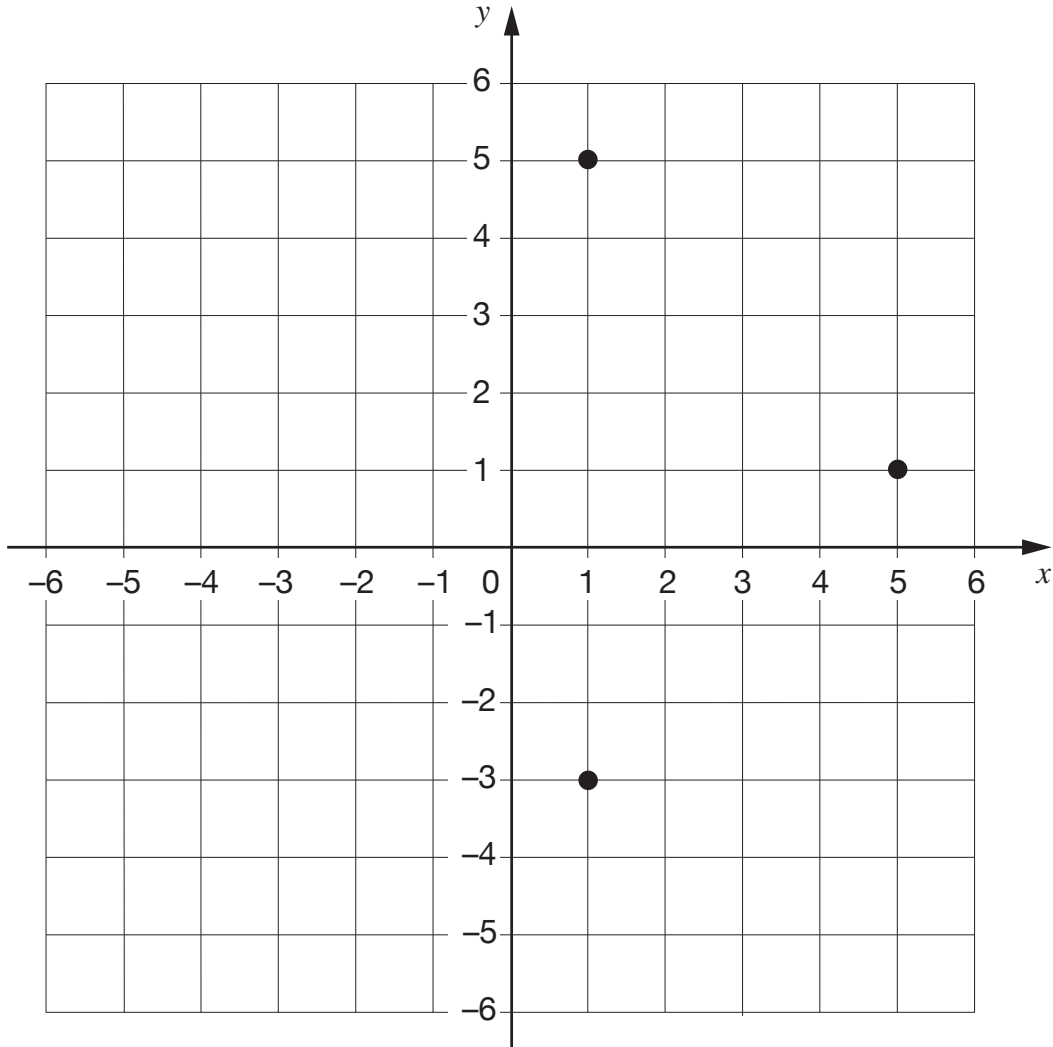
cm

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

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.

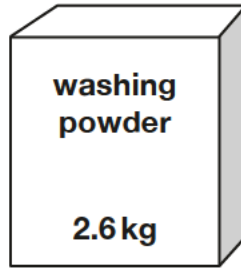
How many times larger is the United Kingdom?

times larger

1 mark

13

A box contains 2.6 kg of washing powder.

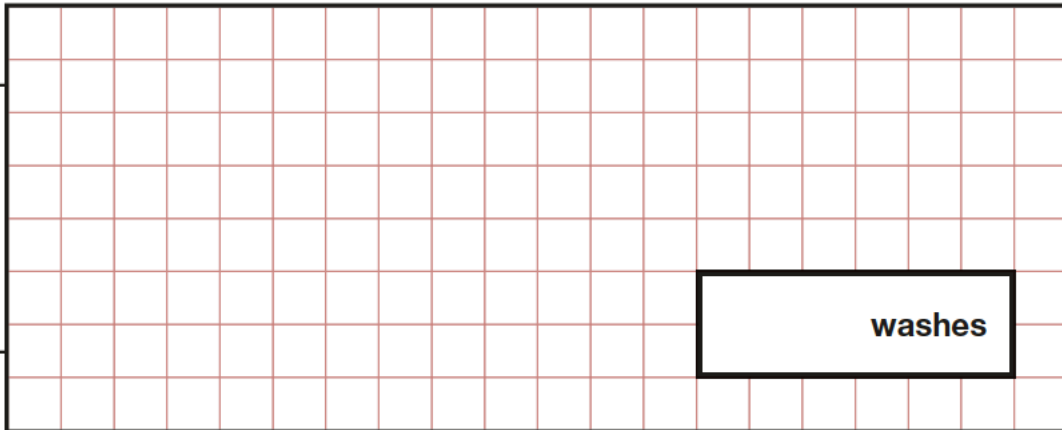


Jack uses 65 grams of powder for each wash.

He uses all the powder.

How many washes did Jack do?

Show
your
method



2 marks



14

Two of the angles in a triangle are 70° and 40°

Jack says,

The triangle is equilateral.



Explain why Jack is **not** correct.

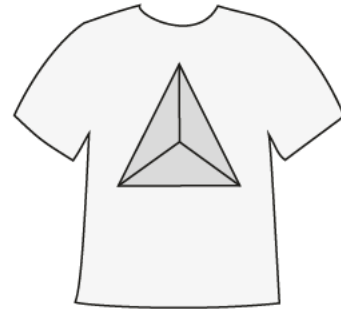
A large, empty, cloud-shaped box with a scalloped border, intended for the student to write their explanation.

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?

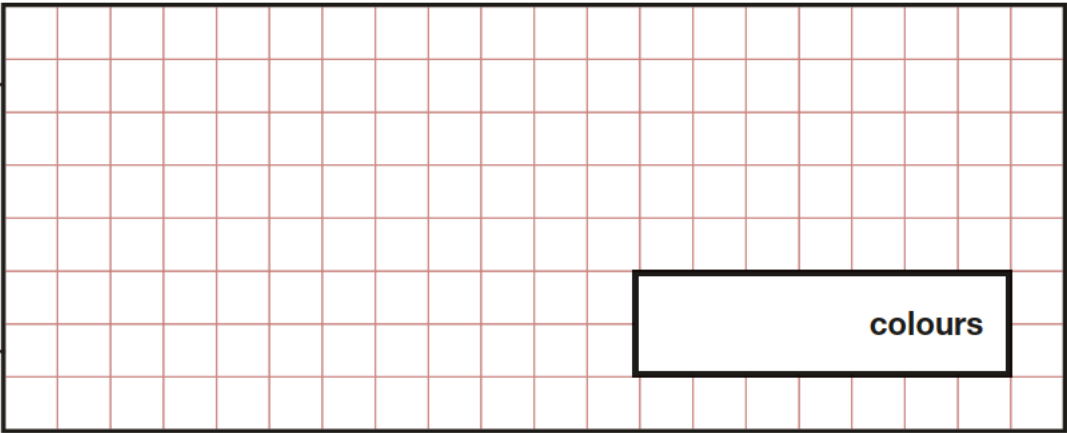
£

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?

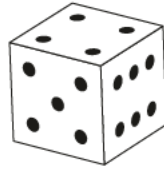
Show
your
method

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

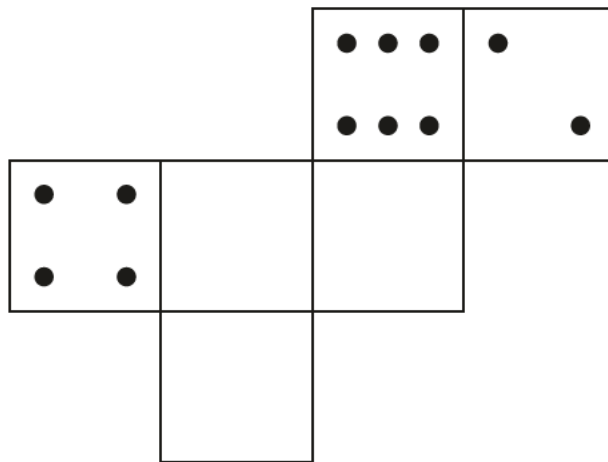
2 marks

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.



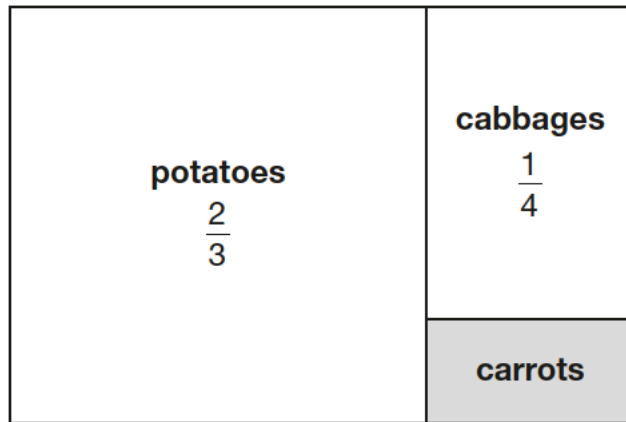
1 mark



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.

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

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

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

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 units wide and 10 units high. A small rectangle labeled 'eggs' is drawn on the grid, spanning 4 units in width and 2 units in height, starting from the 16th vertical line and the 7th 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

Paper 3: reasoning

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