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						

G 0 0 0 8 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

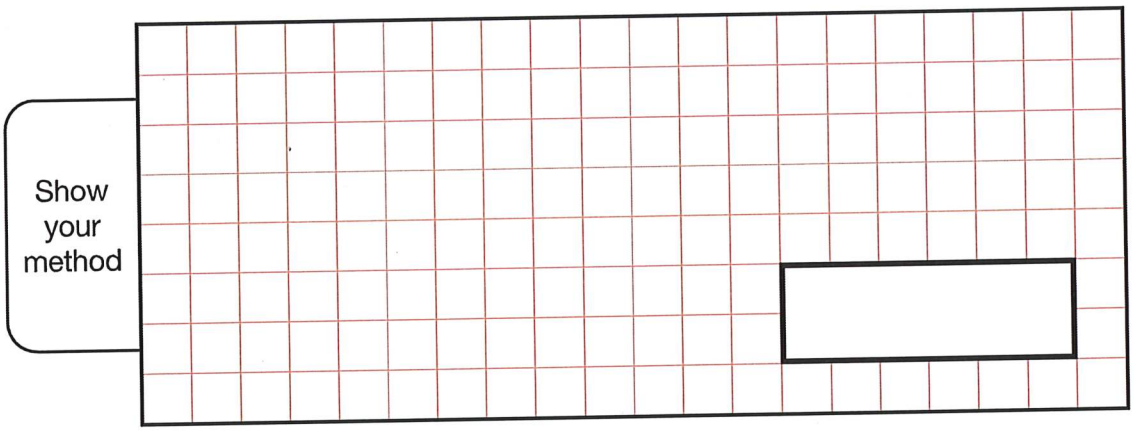
You have **40 minutes** to complete this test.

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.

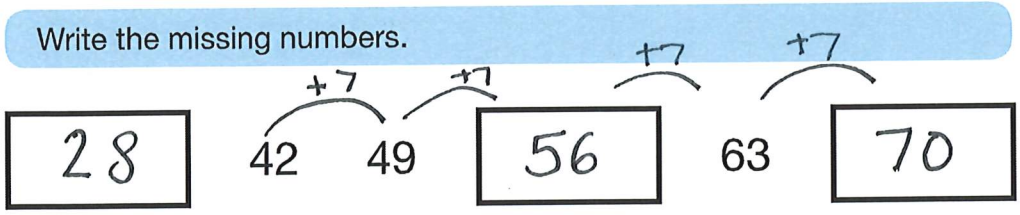
If you finish before the end, **go back and check your work**.

Marks

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

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

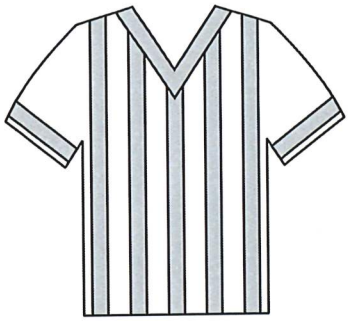
Write the missing numbers.



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:

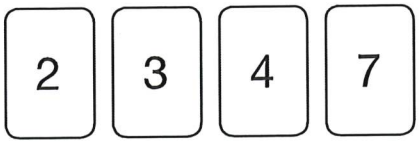
- yellow and blue
- yellow and white
- yellow and red
- blue and white.

blue and red

red and white

1 mark

3 Here are four number cards.

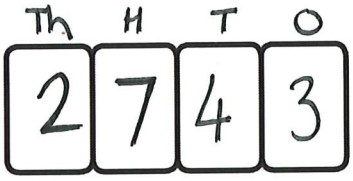


Layla uses each card once to make a four-digit number.

She places:

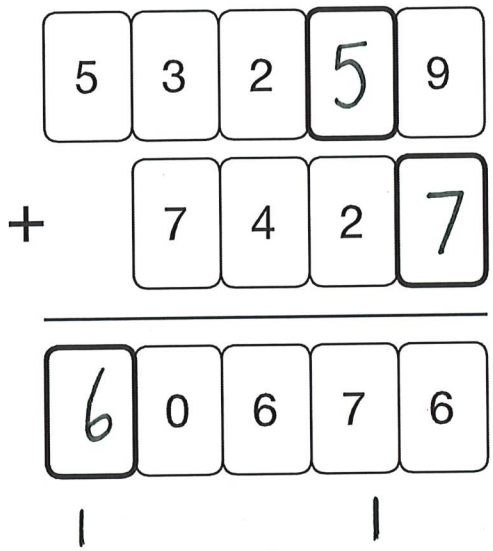
- 4 in the tens column
- 2 so that it has a higher value than any of the other digits
- the remaining two digits so that 7 has the higher value.

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



1 mark

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



2 marks

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

2 ☑

3 ☐

6 ☐

9 ☐

12 ☐

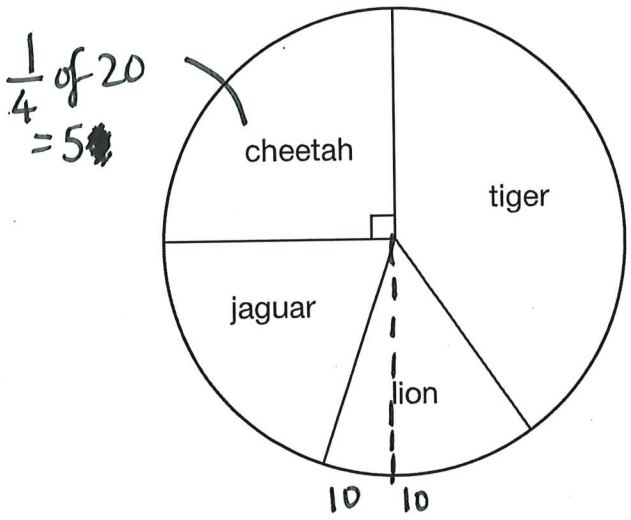
12
① × 12
② × 6
3 × 4

18
① × 18
② × 9

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 ☐

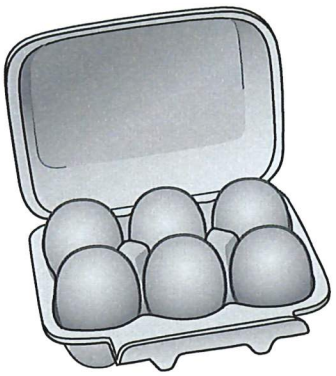
One-quarter of the big cats are cheetahs. ☑

There are more than 5 jaguars. ☑

2 marks

7 A farmer is packing eggs.

Each box holds **six** eggs.



1 63 r 2
6 | 980
32

The farmer has 980 eggs to pack.

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

163 **full boxes**

1 mark

How many eggs will be left over?

2 **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?

400 ÷ 100 = 4

4 x 35 = 140

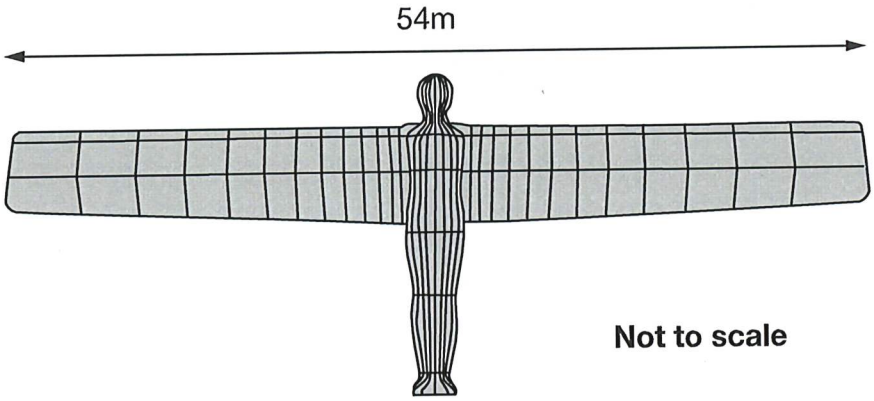
£14

1 mark

35
4
140
2

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

It is 20 metres tall and 54 metres wide.



40cm

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

Her model is 40 centimetres tall.

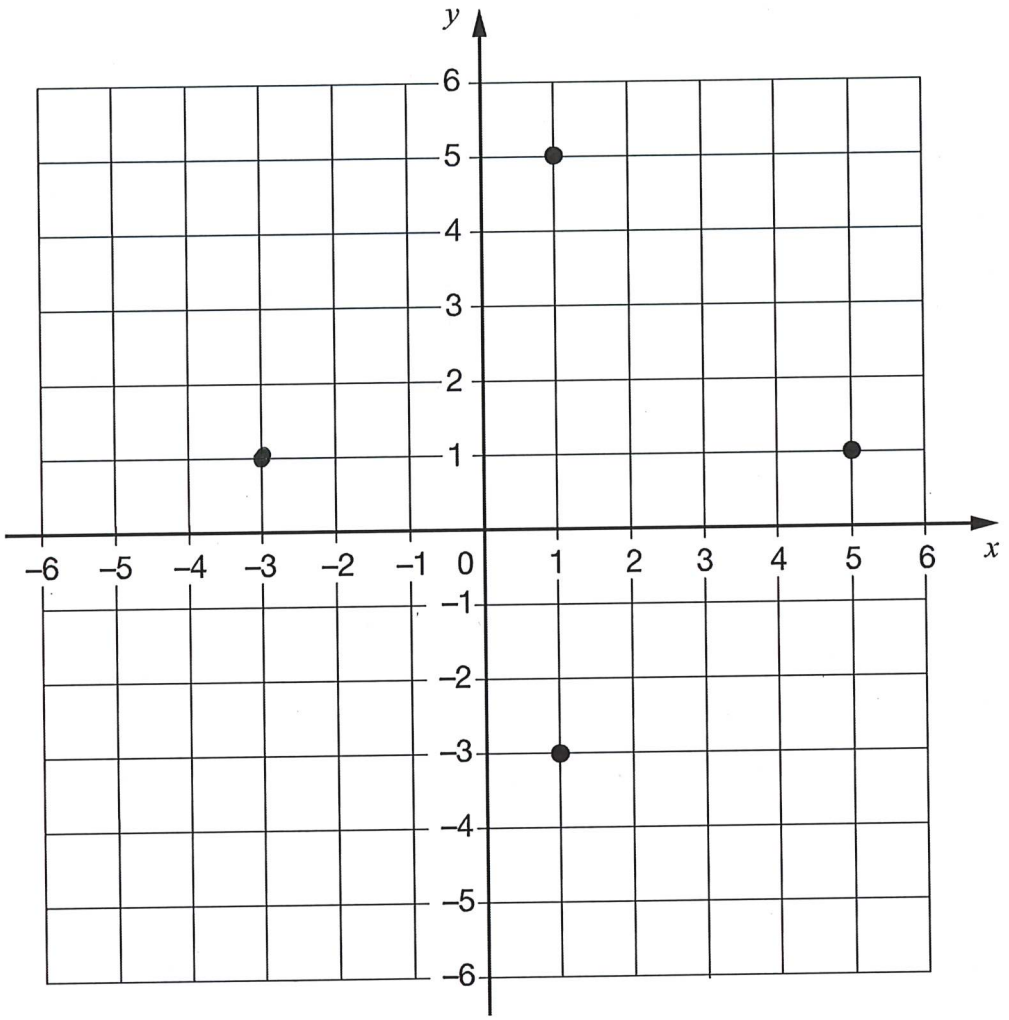
How **wide** is her model?

54 cm

1 mark

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

Three of the vertices are marked.



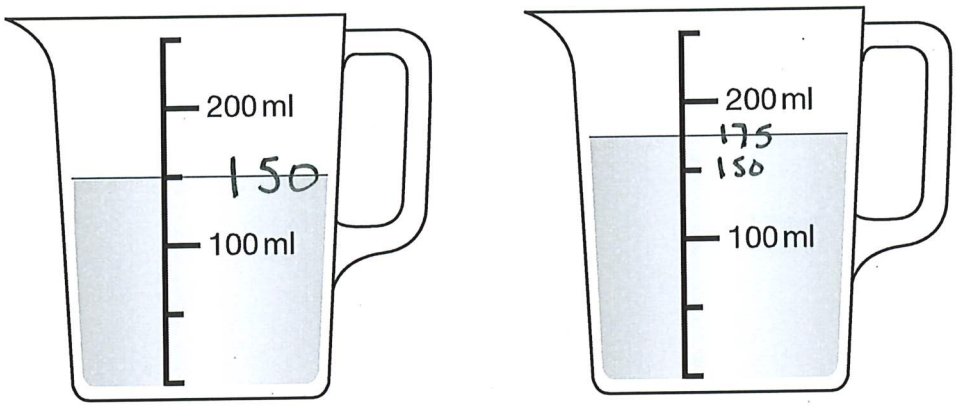
What are the coordinates of the missing vertex?

(1, -3)

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

$$\begin{array}{r} 175 \\ +\ 150 \\ \hline 325 \\ 1 \end{array} \qquad \begin{array}{r} 600 \\ -\ 325 \\ \hline 325 \end{array}$$

325 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

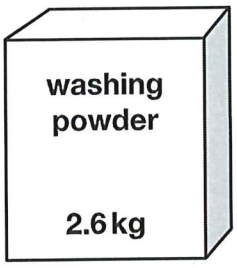
The area of the United Kingdom is larger than the area of Jamaica.

How many times larger is the United Kingdom?

24 **times larger**

1 mark

13 A box contains 2.6 kg of washing powder.



= 2600 g

Jack uses 65 grams of powder for each wash.

He uses all the powder.

How many washes did Jack do?

Show your method

65 | 2600

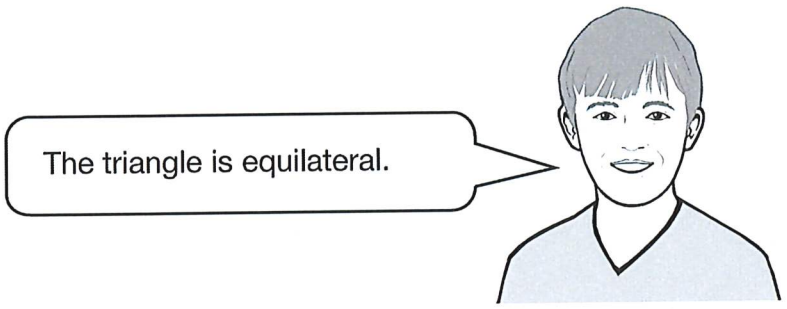
65 x 1 = 65
65 x 2 = 130
65 x 3 = 195
65 x 4 = 260
65 x 40 = 2600

40 washes

2 marks

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

Jack says,

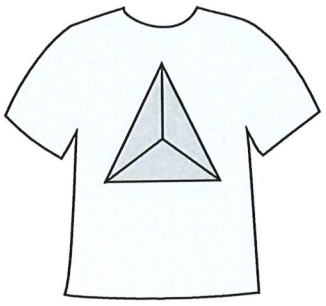


Explain why Jack is **not** correct.

No because 70° + 40° = 130°

1 mark

15 A shop prints designs on T-shirts.



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

price = 60p × number of colours + £1.25

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

60p × 3 + 1.25
120p + 1.25
£1.20 + £1.25

£ 2.45

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

9
4~~8~~.~~8~~10
− 1.25
3.75

0.60
1.20
1.80
2.40
3.00
3.60

6 colours

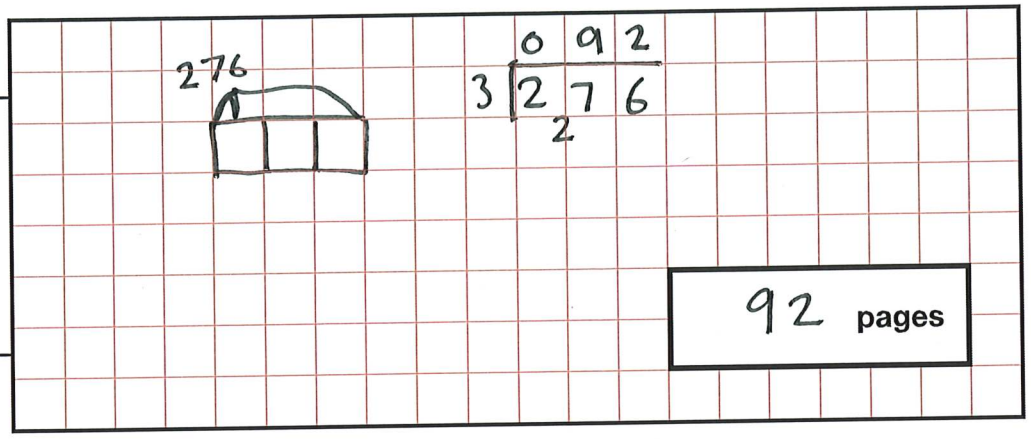
2 marks

16 A book has 276 pages.

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

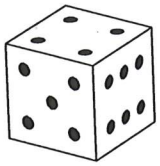
How many pages are **left** for Amina to read?

Show your method

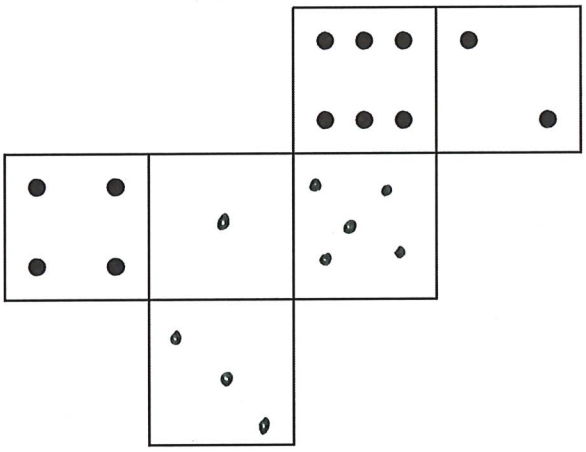


2 marks

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



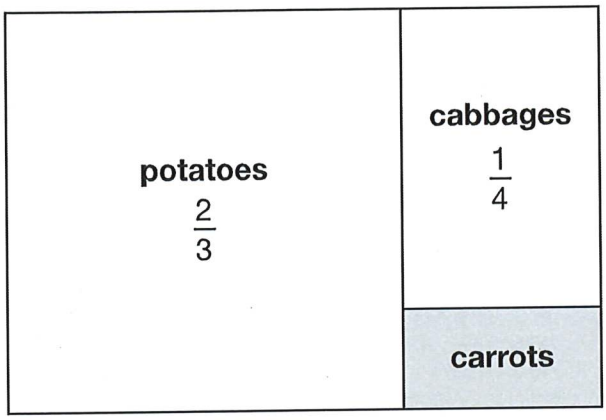
Draw dots on the three empty faces of the net so that it could fold up to make a dice.



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

$\frac{2 \times 4}{3 \times 4} + \frac{1 \times 3}{4 \times 3}$

$\frac{8}{12} + \frac{3}{12} = \frac{11}{12}$

$\frac{1}{12}$

2 marks

19

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

Use this multiplication to complete the calculations below.

$354 \times 9.5 =$ 33,630

$3{,}540 \times 95 =$ 33,6300

$3{,}363 \div 95 =$ 35.4

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

11 days left

11 x 4 = 44

44 eggs

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?

$$\begin{array}{r} 53\cdot25 \\ +\ 3\cdot50 \\ \hline 56\cdot75 \end{array}$$

56 **min** 75 **sec**

1 mark

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

How long did Layla take?

$$\begin{array}{r} {}^{1}{}^{12} \\ 4\not{5}\not{3}\cdot{}^{1}25 \\ -\ 8\cdot45 \\ \hline 44\cdot80 \end{array}$$

44 **min** 80 **sec**

1 mark

Standards & Testing Agency

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