

2016 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 **may 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

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 maximum number of marks for each question.



1

The numbers in this sequence increase by 14 each time.

Write the missing numbers.

82

96

124

138

2 marks



2

This table shows the temperature at 9am on three days in January.

1st January	8th January	15th January
+ 5°C	- 4°C	+ 1°C

What is the difference between the temperature on 1st January and the temperature on 8th January?

1 mark

On 22nd January the temperature was 7 degrees lower than on 15th January.

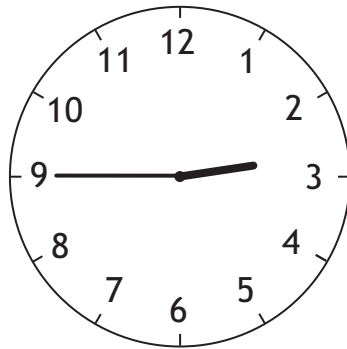
What was the temperature on 22nd January?

1 mark



3

A clock shows this time twice a day.



Tick the two digital clocks that show this time.

03:45

02:45

09:45

21:45

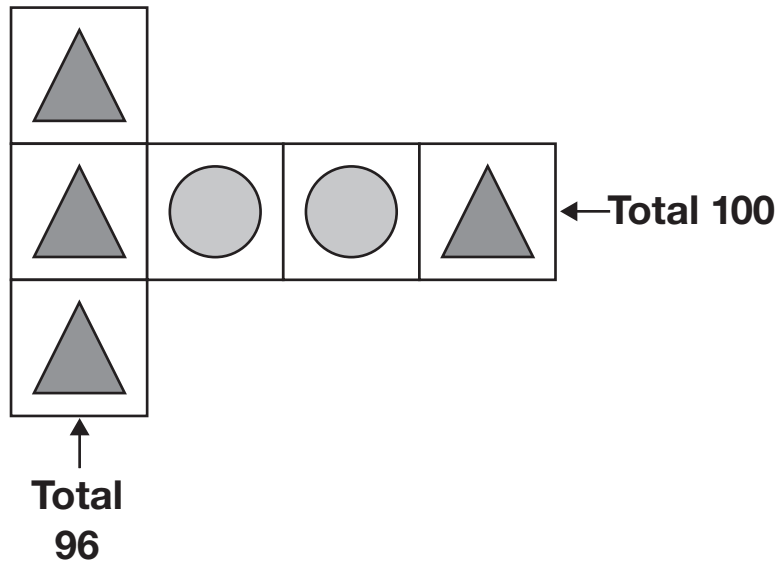
14:45

1 mark



4

Each shape stands for a number.



Work out the **value** of each shape.

$$\triangle = \underline{\hspace{2cm}}$$

1 mark

$$\bigcirc = \underline{\hspace{2cm}}$$

1 mark



5

Write these numbers in order, starting with the **smallest**.

0.78

0.607

5.6

0.098

4.003

**smallest**

1 mark





6

Jacob cuts **4** metres of ribbon into **three** pieces.

The length of the first piece is **1.28** metres.

The length of the second piece is **1.65** metres.

Work out the length of the third piece.

Show  
your  
method

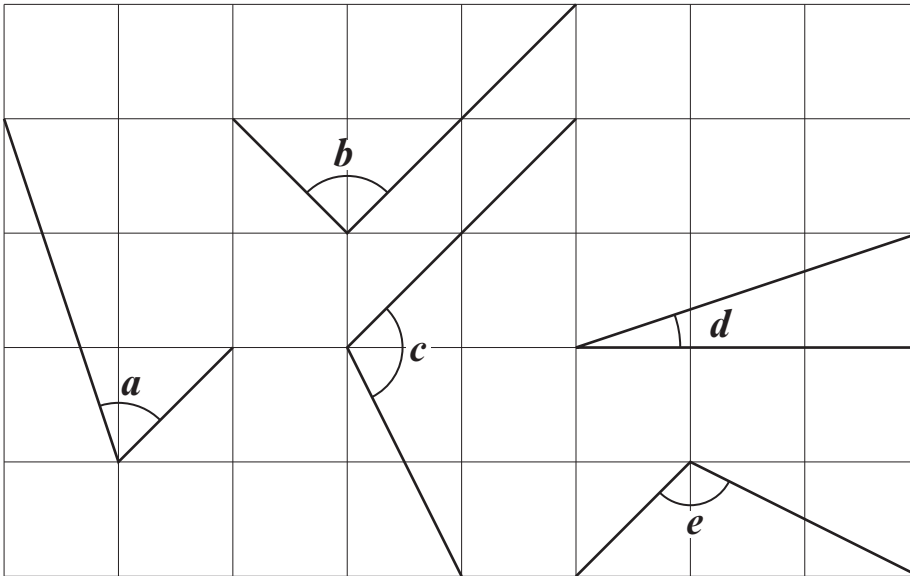
metres

2 marks



7

Here are five angles marked on a grid of squares.



Write the letters of the angles that are **obtuse**.

\_\_\_\_\_

1 mark

Write the letters of the angles that are **acute**.

\_\_\_\_\_

1 mark



8

Olivia buys three packets of nuts.



She pays with a £2 coin.

This is her change.



What is the cost of **one** packet of nuts?

Show  
your  
method

A large grid for showing the method to solve the problem. The grid is 15 units wide and 10 units high. A rounded rectangle on the left side of the grid contains the text "Show your method". A smaller empty rectangle is drawn on the grid, spanning 4 units in width and 2 units in height, located in the lower right quadrant.

2 marks



9

Here is part of the bus timetable from Riverdale to Mott Haven.

Riverdale	10:02	10:12	10:31	10:48
Kingsbridge	10:11	10:21	10:38	10:55
Fordham	10:28	10:38	10:54	11:11
Tremont	10:36	10:44	11:00	11:17
Mott Haven	10:53	11:01	11:17	11:34

How many minutes does it take the 10:31 bus from Riverdale to reach Mott Haven?

minutes

1 mark

Mr Evans is at Fordham at 10:30

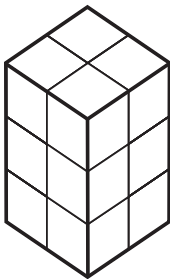
What is the **earliest** time he can reach Tremont on the bus?

1 mark

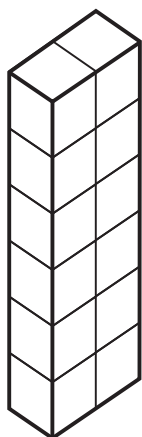


10

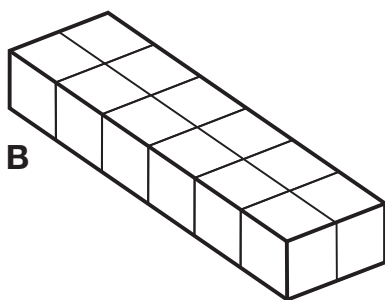
Emma makes a cuboid using 12 cubes.



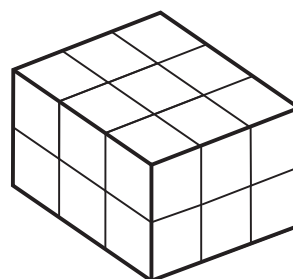
Write the letter of the cuboid that has a **different** volume from Emma's cuboid.



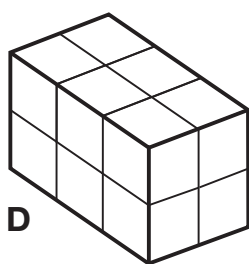
A



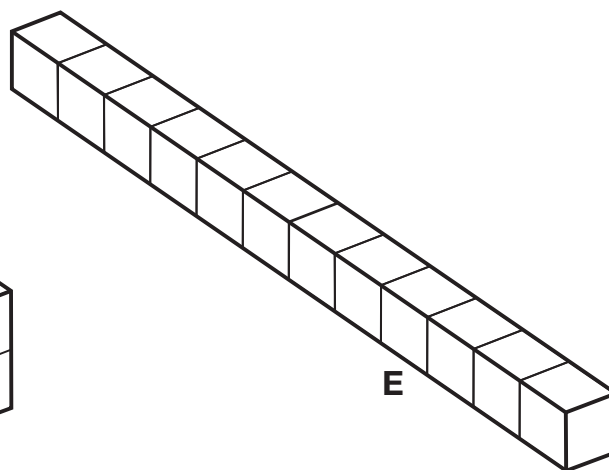
B



C



D



E

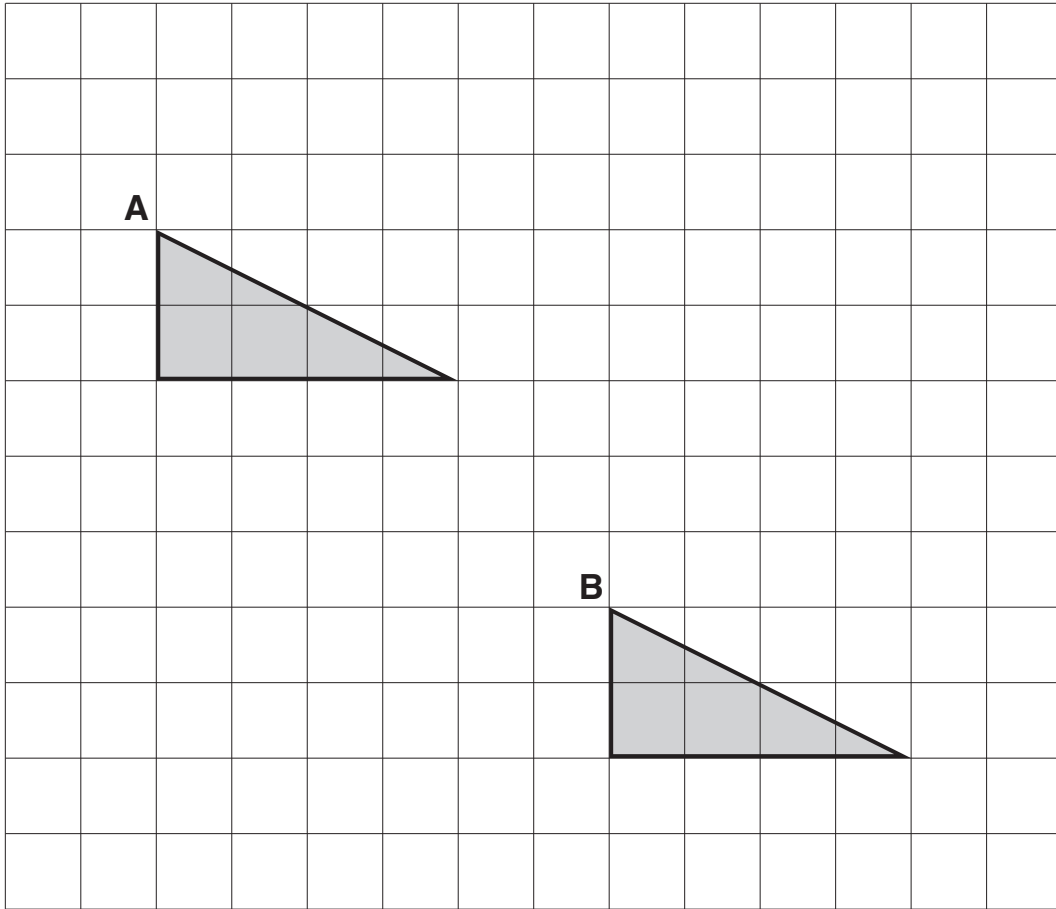
\_\_\_\_\_ 1 mark





12

A triangle is translated from position **A** to position **B**.



Complete the sentence.

The triangle has moved  squares to the right

and  squares down.

1 mark



13

Lara chooses a number less than 20

She divides it by 2 and then adds 6

She then divides this result by 3

Her answer is 4.5

What was the number she started with?

Show  
your  
method

The grid is 20 units wide and 10 units high. A smaller box, 6 units wide and 2 units high, is located in the lower right quadrant of the grid, intended for the final answer.

2 marks





14

Complete each sentence using a number **from the list below**.

120      240      600      1,440      3,600      6,000

There are  seconds in an hour.

1 mark

There are  minutes in a day.

1 mark

15

Complete this table by rounding the numbers to the **nearest hundred**.

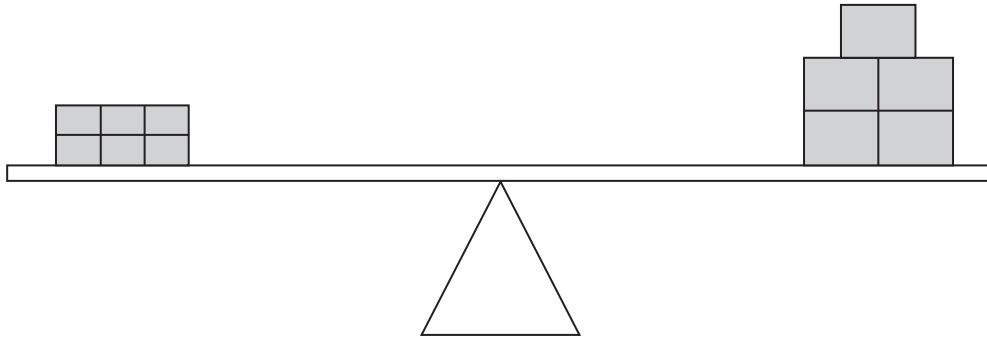
	Rounded to the nearest hundred
20,906	
2,090.6	
209.06	

2 marks



16

6 small bricks have the same mass as 5 large bricks.



The mass of one small brick is 2.5 kg.

What is the mass of one large brick?

Show your method

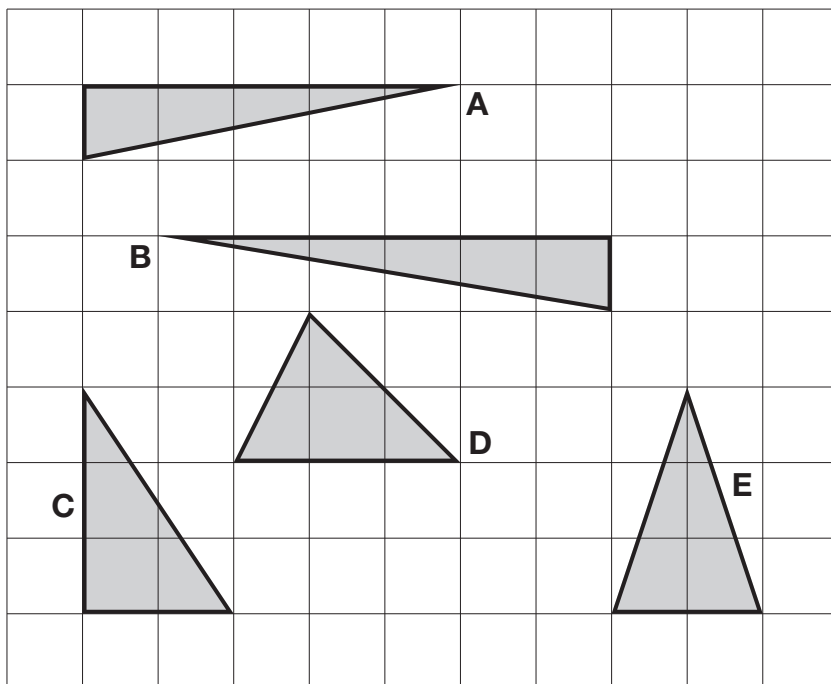
The grid is 10 units wide and 10 units high. A box for the answer is located in the bottom right corner of the grid, containing the text "kg".

2 marks



17

Here are five triangles on a square grid.



Four of the triangles have the same area.

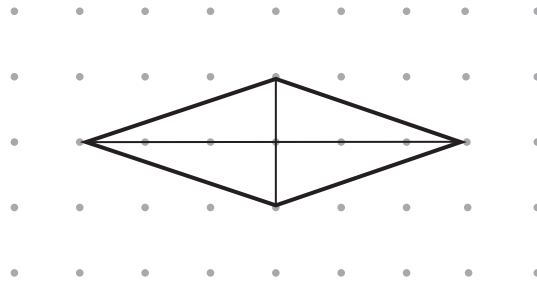
Which triangle has a **different** area?

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

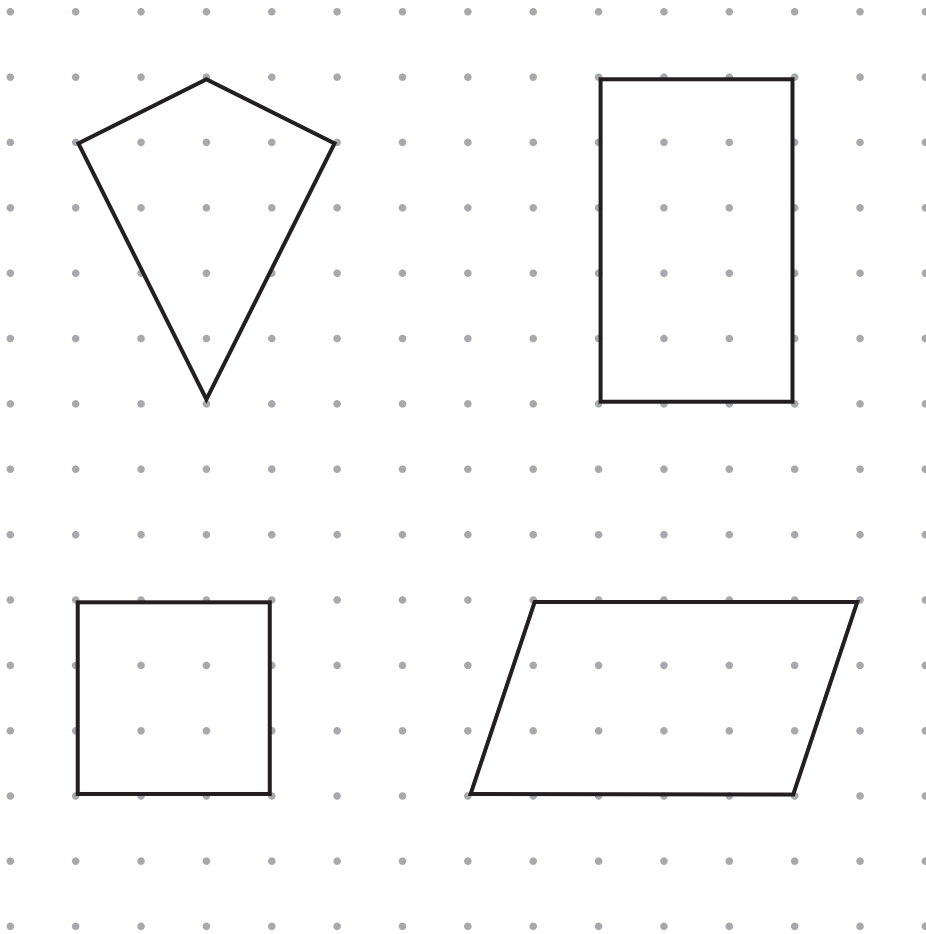


18

The diagonals of this quadrilateral cross at right angles.



Tick **all** the quadrilaterals that have diagonals which cross at right angles.



2 marks



19

Circle two numbers that multiply together to equal **1 million**.

200

2,000

5,000

50,000

1 mark

20

Lara had some money.

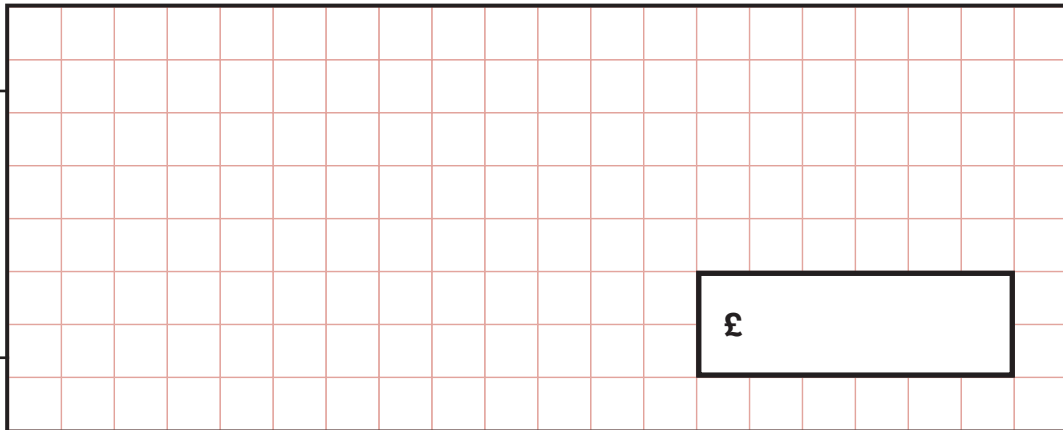
She spent £1.25 on a drink.

She spent £1.60 on a sandwich.

She has **three-quarters** of her money left.

How much money did Lara have to **start with**?

Show  
your  
method



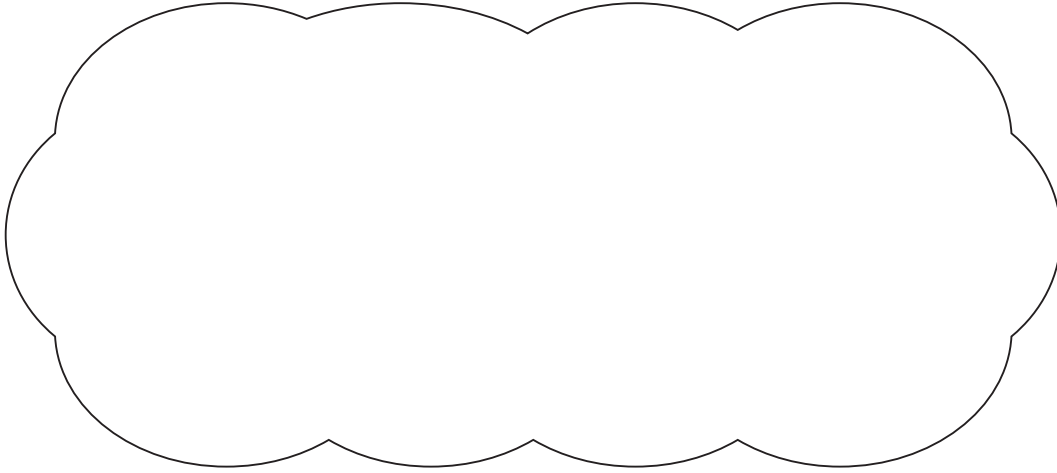
2 marks



21

$$5,542 \div 17 = 326$$

Explain how you can use this fact to find the answer to  $18 \times 326$



1 mark



**[END OF TEST]**

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Standards  
& Testing  
Agency

2016 key stage 2 mathematics

Paper 3: reasoning

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