

2022 national curriculum tests

# Key stage 2

## Mathematics

### Paper 2: reasoning

First name						
Middle name						
Last name						
Date of birth	Day		Month		Year	
School name						
DfE number						



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## 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 large grid with a rounded rectangle on the left side containing the text "Show your method". A smaller empty rectangle is positioned at the bottom right of the grid.

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

Circle the **greatest** number.

9,206,499

9,215,300

9,206,504

9,215,298

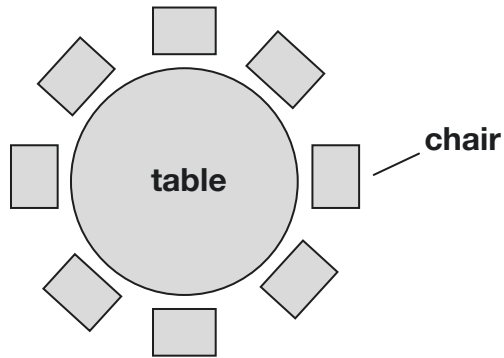
9,206,909

1 mark



2

One table can seat 8 people.



How many tables are needed to seat 40 people?

1 mark

3

Write the missing number to make this **addition** correct.

$$400,000 + \boxed{\phantom{000000}} + 70 = 430,070$$

1 mark



4

Children estimated the number of beans in a jar.

These were the estimates of five children.

<b>Amir</b>	1,310
<b>Olivia</b>	1,220
<b>Emma</b>	1,400
<b>John</b>	1,290
<b>Chen</b>	1,460

The exact number of beans in the jar was **1,380**

Whose estimate was **closest** to the exact number?

\_\_\_\_\_

1 mark

Whose estimate was **furthest** from the exact number?

\_\_\_\_\_

1 mark



5

One tonne is 1,000 kilograms.

A truck can carry a load of 2.3 tonnes.

How many **kilograms** can the truck carry?

 kg

1 mark

6

Emma has a 5 litre bag of compost.



She uses 2.75 litres.

How much compost does Emma have left?

 litres

1 mark



7

In a race, Ali completes a swim, a run and a bicycle ride.

The swim is  $\frac{1}{10}$  of the total distance.

The run is  $\frac{3}{10}$  of the total distance.

What fraction of the total distance is the **bicycle ride**?

1 mark

8

Circle the improper fraction that is equivalent to  $2\frac{3}{8}$

$$\frac{5}{8}$$

$$\frac{14}{8}$$

$$\frac{19}{8}$$

$$\frac{23}{8}$$

$$\frac{26}{8}$$

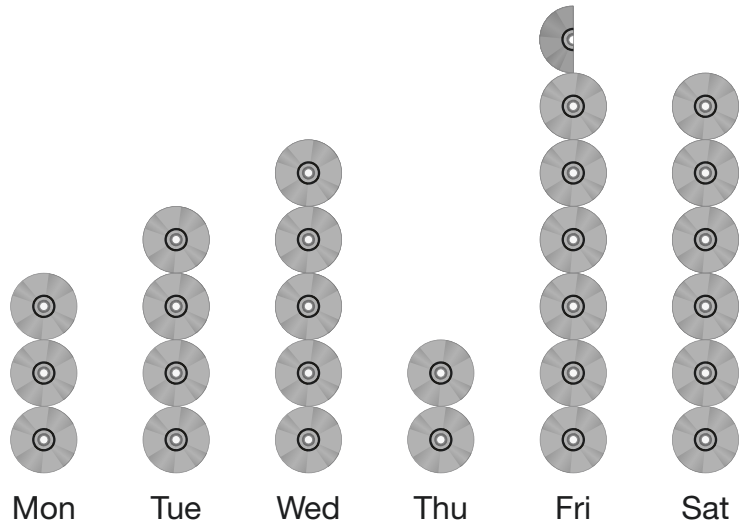
1 mark





9

This pictogram shows how many DVDs a shop sells in one week.



On **Monday**, 24 DVDs were sold.

How many DVDs were sold on **Friday**?

1 mark



10

A shop has an offer.



Buy one box for £1.90  
Get the second box half price.

Ali buys two boxes of cereal.

How much must he pay **altogether**?Show  
your  
method

£

---

2 marks

11

Write the missing values.

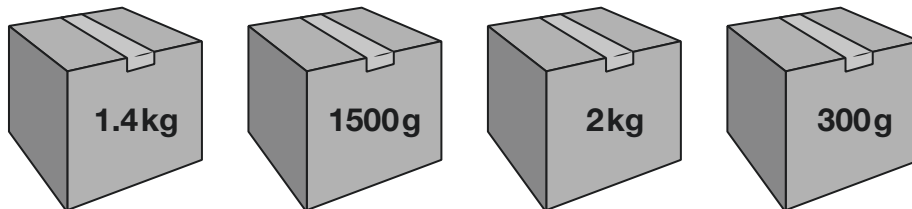
$$\frac{3}{10} = \frac{\square}{20}$$

$$\frac{12}{15} = \frac{4}{\square}$$

1 mark

12

William has four parcels.

Write the masses in order, starting with the **heaviest**.

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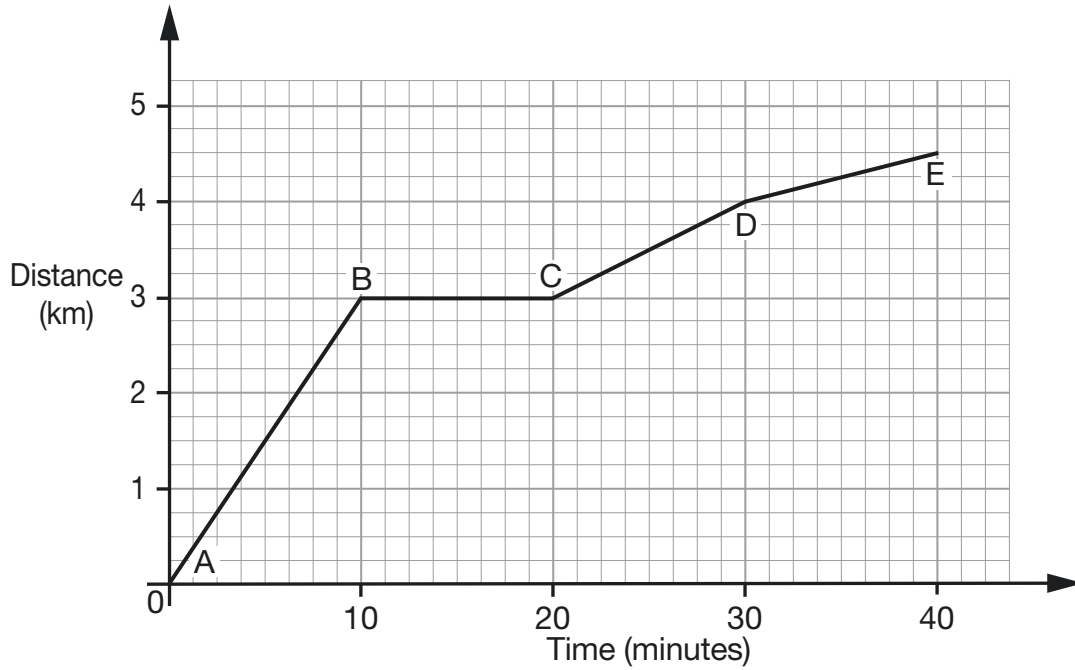
heaviest

1 mark



13

Look at the graph below that shows Dev's bike ride.



Match each part of Dev's journey to the correct sentence.

A to B

Dev rests for 10 minutes.

B to C

Dev cycles 1 km in 10 minutes.

C to D

Dev cycles 3 km in 10 minutes.

D to E

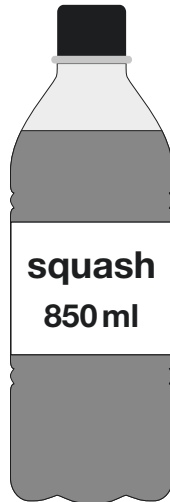
Dev cycles less than 1 km in 10 minutes.

1 mark



14

This 850ml bottle of squash makes 17 drinks.



How many millilitres of squash are in each drink?

1 mark

15

Write the correct sign =, > or < in each box.

$1 \times 2 \times 3$

$1 + 2 + 3$

$2 \times 2 \times 2$

$2 + 2 + 2$

$1 \times 10 \times 10$

$1 + 10 + 10$

$0 \times 10 \times 10$

$0 + 10 + 10$

2 marks



16

Tick the numbers that round to 28.7

28.07 28.65 28.71 28.75 28.97 

---

1 mark

17

6 divides into 40 with a remainder of 4

Write **one** other number that divides into 40 with a remainder of 4

---

1 mark

18

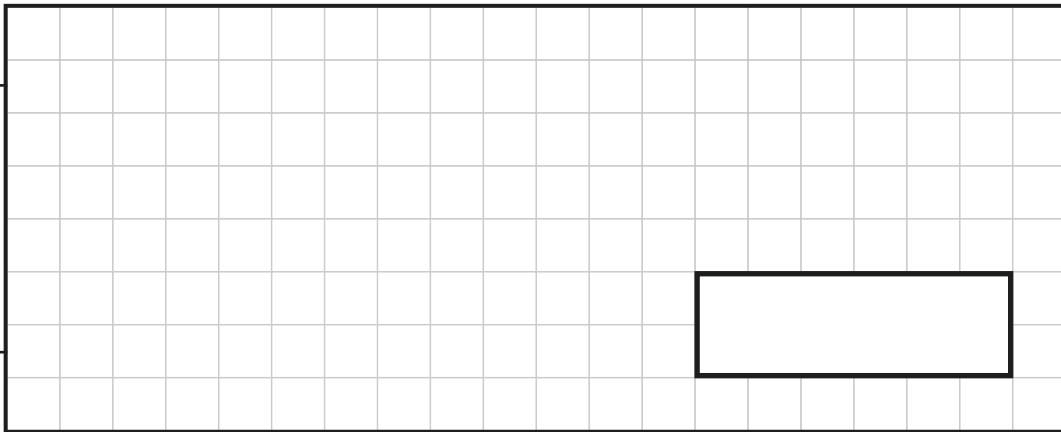
This sign shows the number of **empty spaces** on each level of a car park at 10 am.

<b>P</b>	Empty Spaces
<b>Level 2</b>	511
<b>Level 1</b>	268

In this car park, **each** level has 800 spaces.

What is the total number of cars **parked** in the car park at 10 am?

Show  
your  
method

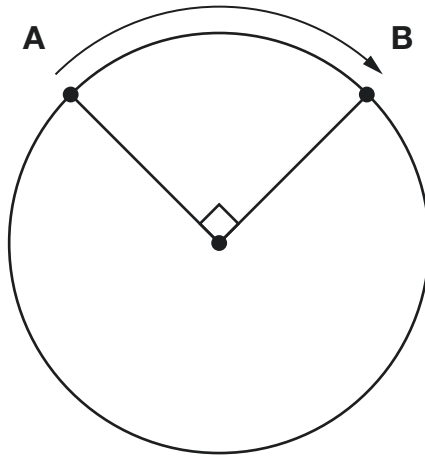


2 marks



19

The **circumference** of this circle is 60 centimetres.



Not  
actual  
size

What is the distance around the edge of the circle from **A** to **B**?

1 mark





**20**

There are 432 places at a dance school.

There are two age groups.

This table shows the number of classes and the number of pupils in each class for each age group at the moment.

Age in years	Number of classes	Number of pupils in each class
7–12	15	16
13–18	10	18

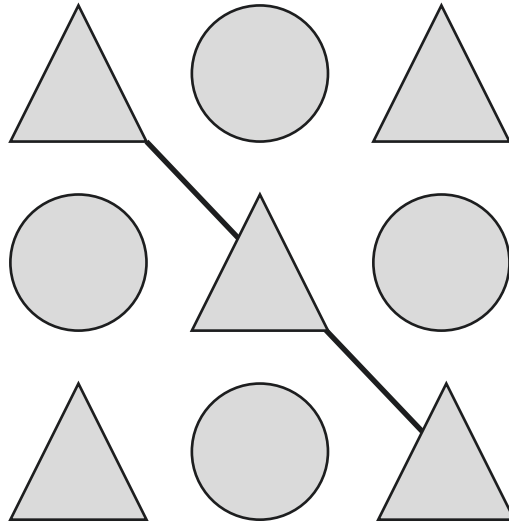
How many **more** pupils can join the dance school?

Show  
your  
method

          
2 marks



21

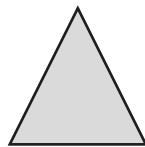


Each shape stands for a number.

The total of the shapes on the diagonal line is 48

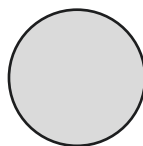
The total of all the shapes is 200

Calculate the value of each shape.



=

1 mark



=

1 mark



22

You can make green paint by mixing:

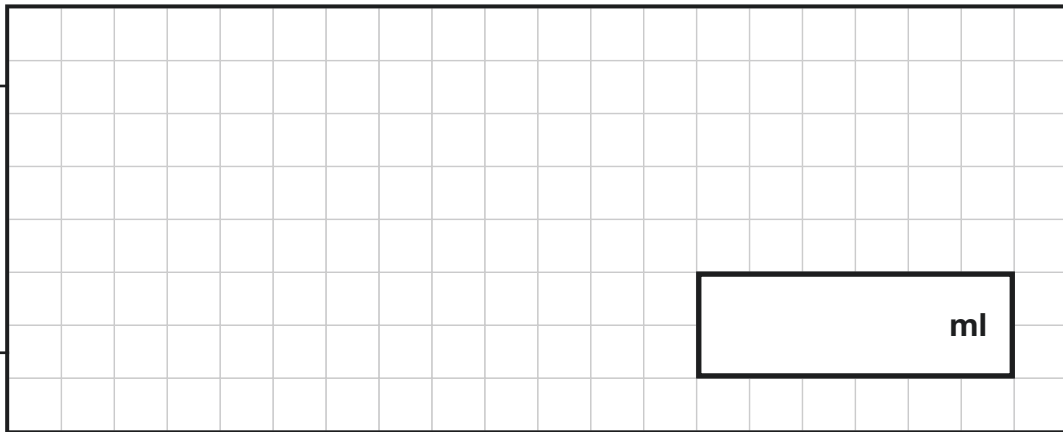
- 250 ml of blue paint
- 1,150 ml of yellow paint.

Stefan wants to make some of this green paint.

He uses 750 ml of **blue** paint.

How much **green** paint does he make?

Show  
your  
method



ml

2 marks

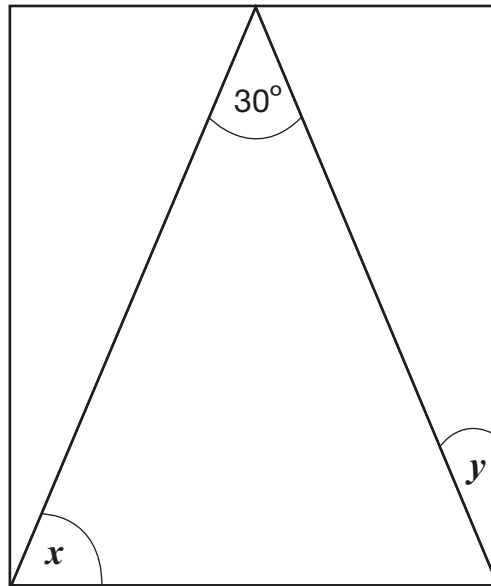


**23**Adam has a bag of fruit that weighs **1.25 kilograms**.He takes out a banana. Now the bag of fruit weighs **1.1 kg**.Next, he takes out an orange. Now the bag weighs **920 g**.How much **more** does the orange weigh than the banana?Show  
your  
method g

2 marks



24

Here is an **isosceles** triangle inside a rectangle.Not to  
scaleCalculate the sizes of angles  $x$  and  $y$ .Show  
your  
method $x =$ 

°

 $y =$ 

°

2 marks

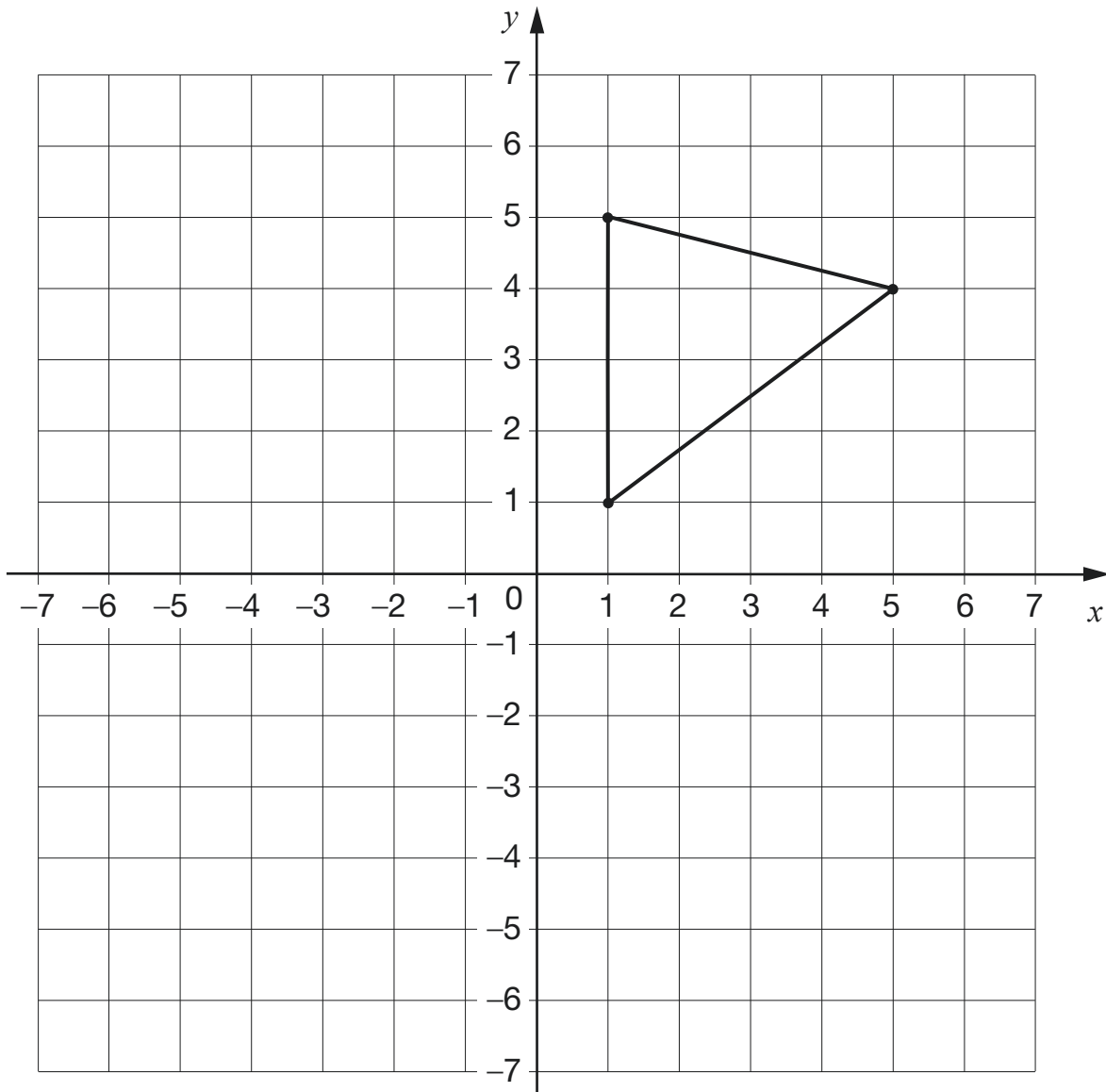


25

The triangle is to be transformed on the grid as follows:

- First translate the shape 7 units down.
- Then reflect the **resulting** triangle in the  $y$ -axis.

Draw the new triangle on the grid after **each** transformation.



Use a ruler.

2 marks



**[END OF TEST]**

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2022 key stage 2 mathematics

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