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:

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.

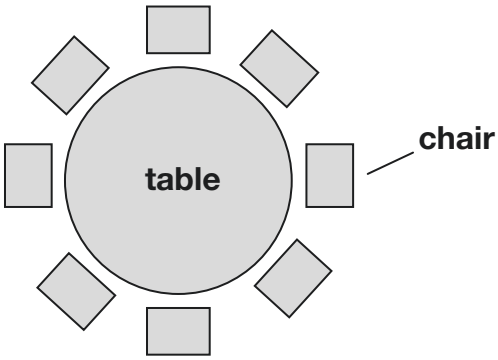
1 Circle the **greatest** number.

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?

tables

1 mark

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

400,000 + ☐ + 70 = 430,070

1 mark

4 Children estimated the number of beans in a jar.

These were the estimates of five children.

Amir	1,310
Olivia	1,220
Emma	1,400
John	1,290
Chen	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**?

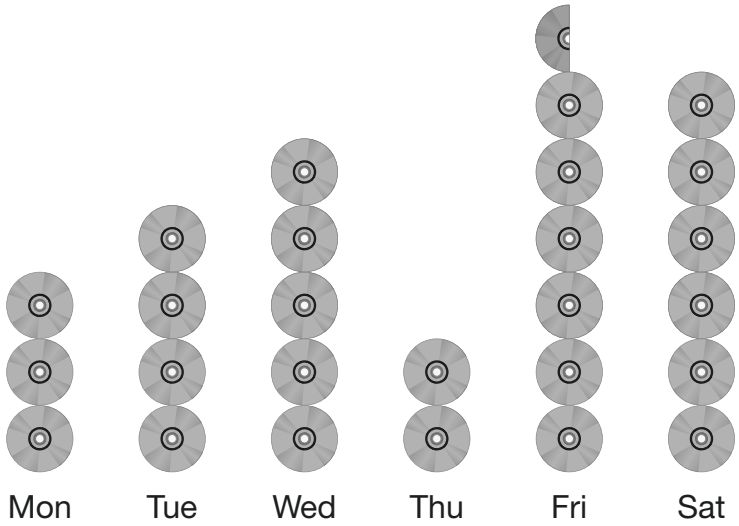
1 mark

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

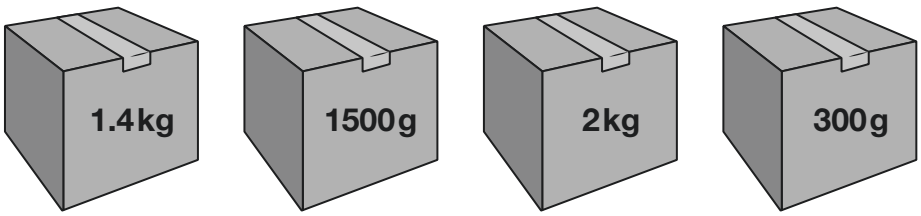
11 Write the missing values.

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

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

1 mark

12 William has four parcels.

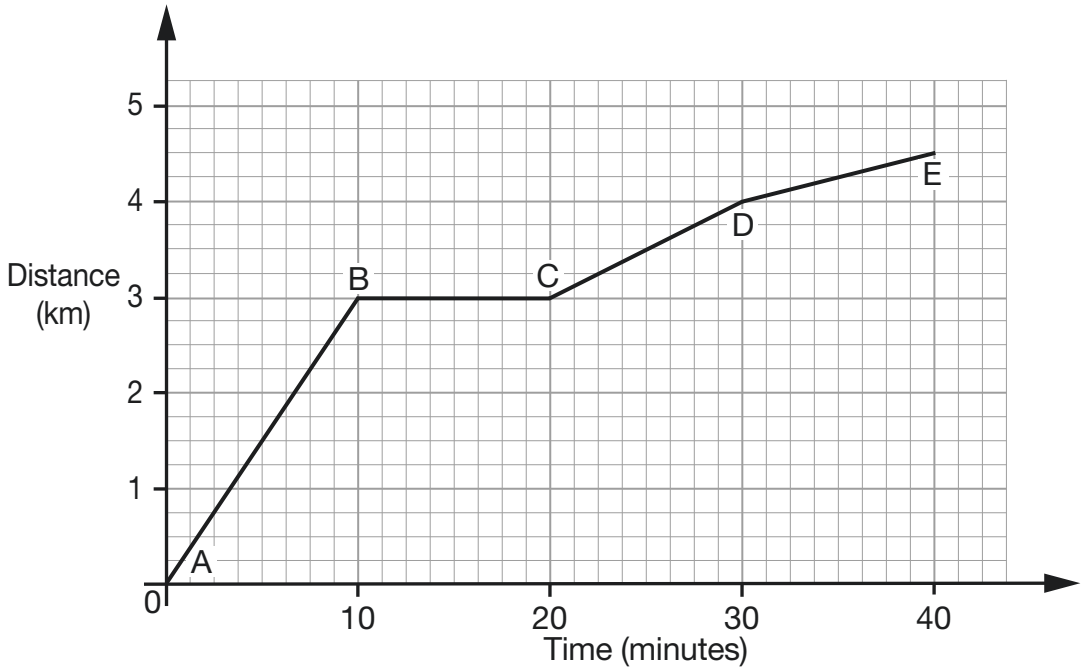


Write the masses in order, starting with the **heaviest**.

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 850 ml bottle of squash makes 17 drinks.

How many millilitres of squash are in each drink?

ml

1 mark

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

$1 \times 2 \times 3 \square 1 + 2 + 3$

$2 \times 2 \times 2 \square 2 + 2 + 2$

$1 \times 10 \times 10 \square 1 + 10 + 10$

$0 \times 10 \times 10 \square 0 + 10 + 10$

2 marks

16 Tick the numbers that round to 28.7

28.07 ☐

28.65 ☐

28.71 ☐

28.75 ☐

28.97 ☐

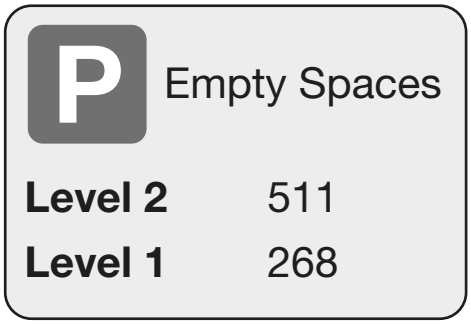
1 mark

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.



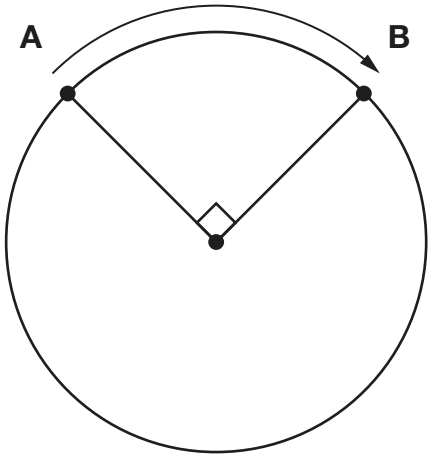
In this car park, **each** level has 800 spaces.

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**?

cm

1 mark

20 There are 432 places at a dance school.

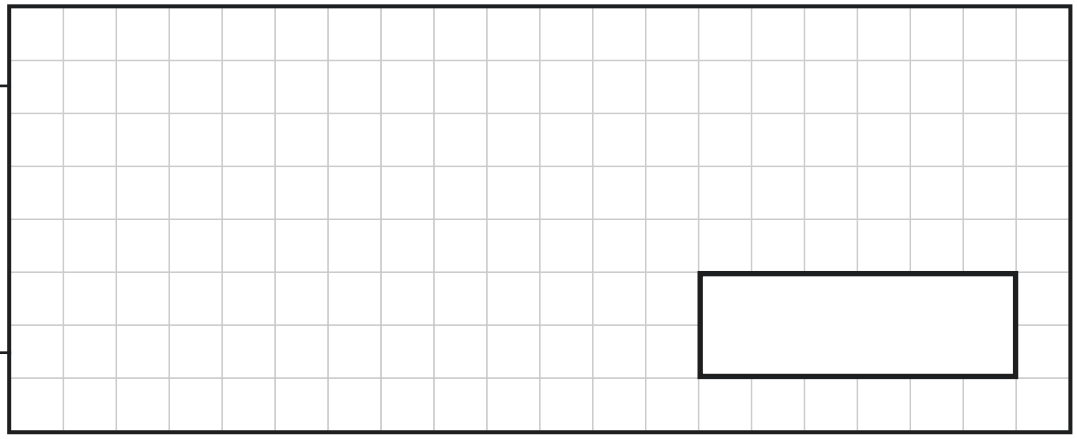
There are two age groups.

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

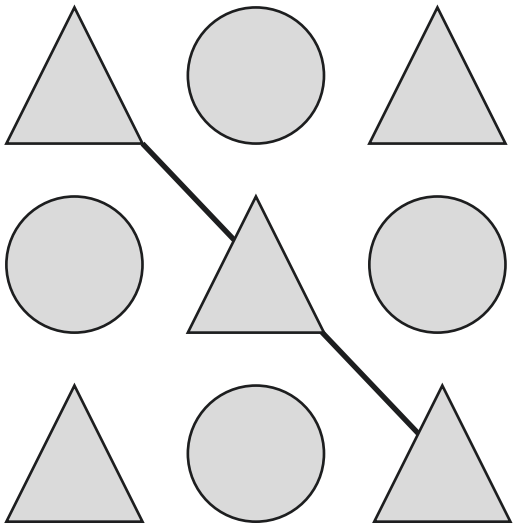
How many **more** pupils can join the dance school?

Show your method



2 marks

21

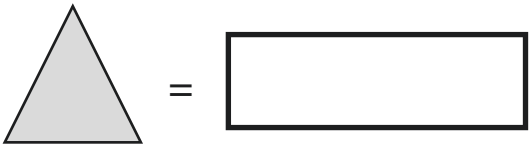


Each shape stands for a number.

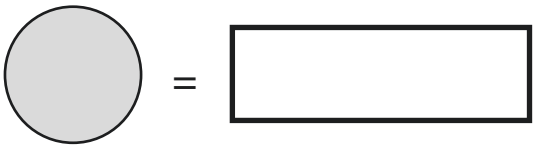
The total of the shapes on the diagonal line is 48

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:

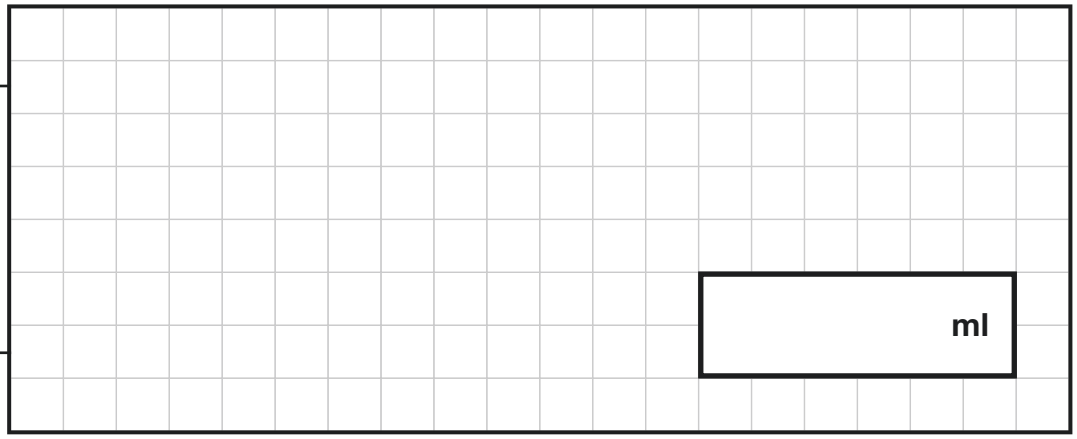
- 250 ml of blue paint
- 1,150 ml of yellow paint.

Stefan wants to make some of this green paint.

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

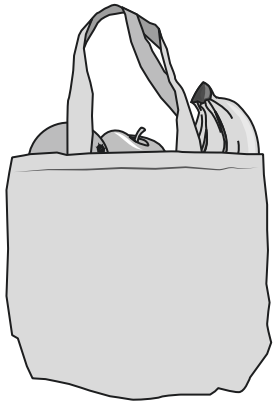
How much **green** paint does he make?

Show your method



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**.

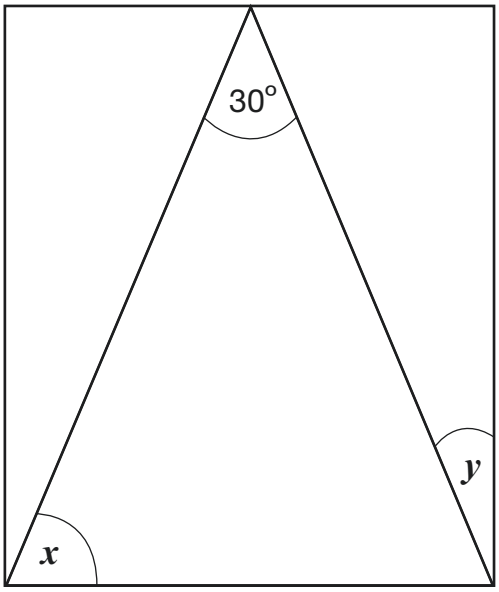
How much **more** does the orange weigh than the banana?

Show your method

g

2 marks

24 Here is an **isosceles** triangle inside a rectangle.



Not to scale

Calculate the sizes of angles x and y.

Show your method

x = °

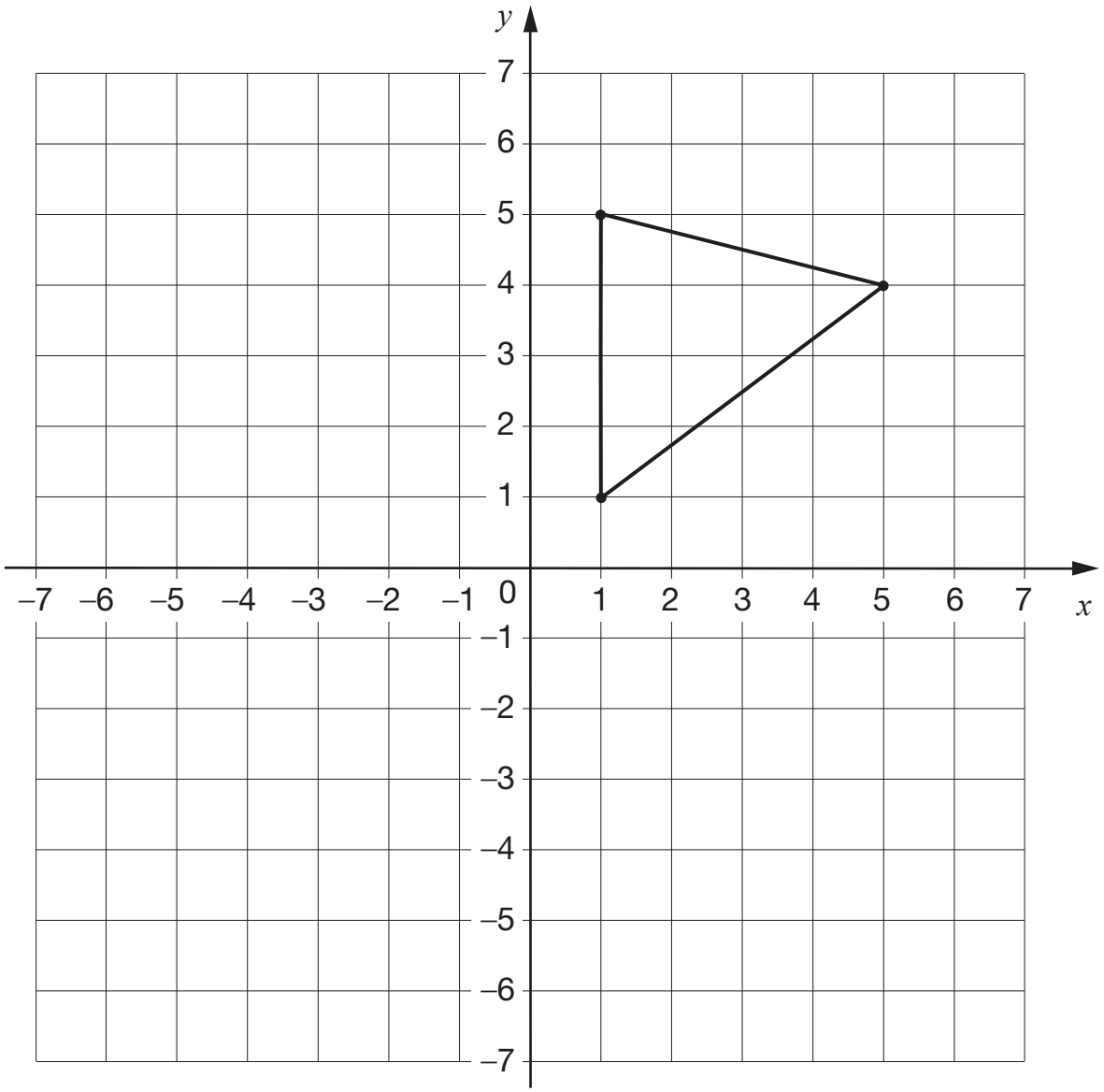
y = °

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.



2 marks

Use a ruler.

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Standards & Testing Agency

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Paper 2: reasoning
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