

Ratio, proportion and rate of change – GCSE Mathematics Paper 3

1. No.6

Pens cost 20p each.

Rulers cost 60p each.

Saj buys some pens and some rulers.

He buys 8 rulers.

The total cost is £10

How many pens does he buy?

[3 marks]

Answer _____

2. No.8

In this question use 1 litre = 1000 millilitres

A mixture is made using white paint and red paint.

$$\text{amount of white paint} = \text{amount of red paint} \div 7$$

5.6 litres of red paint will make **more** than 6 litres of the **mixture**.

How much more?

Give your answer in millilitres.

[4 marks]

Answer _____ ml

3. No.13

In a bag,

number of green discs : number of blue discs = 20 : 11

Tick **one** box for each statement about the discs in the bag.

[2 marks]

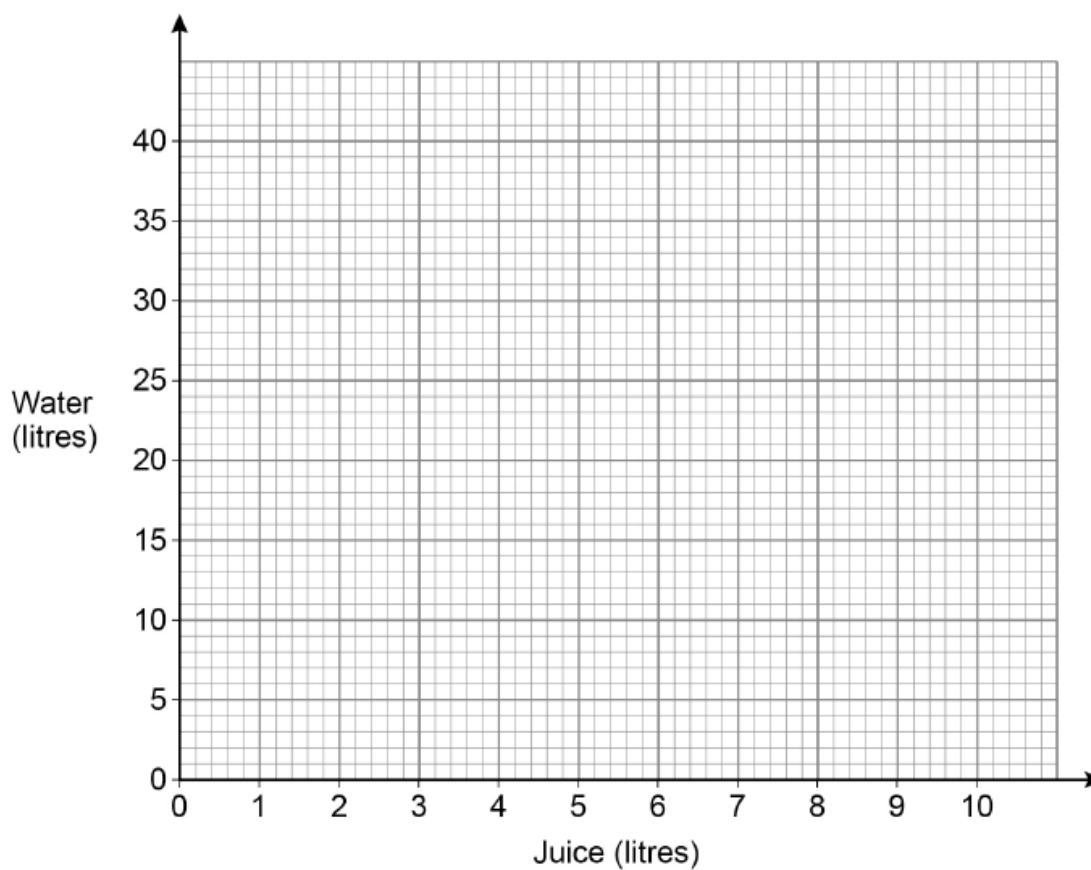
	True	False	Cannot tell
There are more green discs than blue discs.	☐	☐	☐
In total there are 31 discs.	☐	☐	☐

4. No.19

Juice and water are mixed together in the ratio 2 : 7

- (a) Draw a straight line graph that shows the amounts of juice and water to mix together.
Your graph **must** show up to 10 litres of juice.

[2 marks]



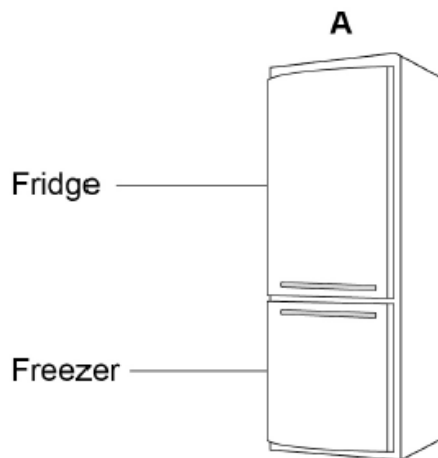
- (b) How much water needs to be mixed with 5 litres of juice?

[1 mark]

Answer _____ litres

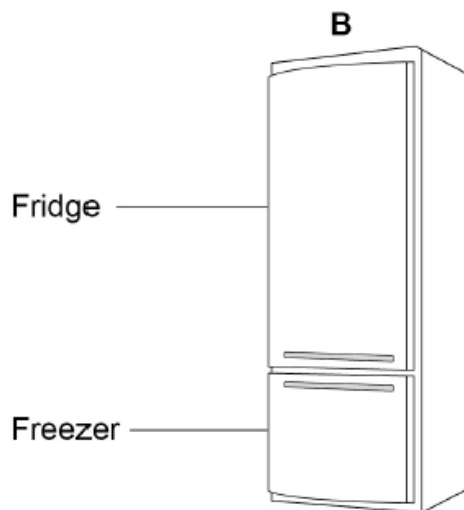
5. No.27

Information about two fridge-freezers, A and B, is shown.



Total capacity is 330 litres

fridge capacity : freezer capacity = 3 : 2



Fridge capacity is 294 litres

fridge capacity : freezer capacity = 7 : 3

Grace buys one of these fridge-freezers.

She buys the one with the greater **freezer** capacity.

Which one does she buy?

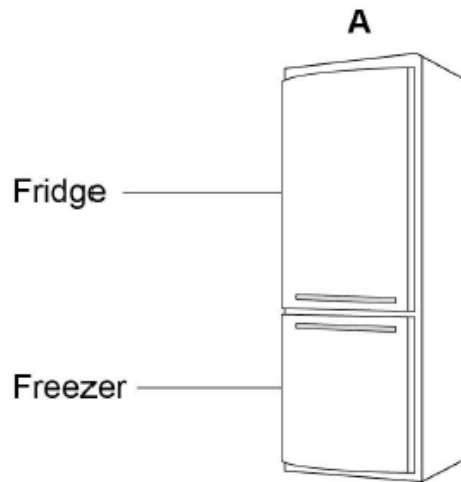
You **must** show your working.

[4 marks]

Answer _____

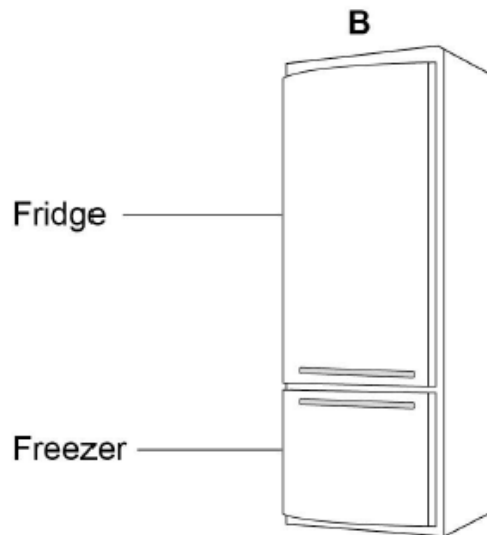
6. No.8

Information about two fridge-freezers, A and B, is shown.



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You **must** show your working.

[4 marks]

Answer _____

7. No.9

Tom and Adil are the two runners in a 200-metre race.

Tom completes the race in 24 seconds.

Adil completes the race at an average speed of 28.8 kilometres per hour.

Who wins the race?

You **must** show your working.

[3 marks]

Answer _____

8. No.10

Boxes of chocolates each contain 25 chocolates.

One box costs £3.25

A shop has a special offer.

Two boxes for £5

How much cheaper **per chocolate** is the special offer?

[3 marks]

Answer _____ pence

9. No.14

A machine takes 4 seconds to fill a packet of crisps.

- (a) In total, how many packets can 35 of these machines fill in 8 hours?

[4 marks]

Answer _____

- (b) Each packet of crisps contains 32.5 grams of crisps.

At what rate does a machine put the crisps into the packets?

Give your answer in grams per second.

[2 marks]

Answer _____ grams per second

10. No.23

Jeff and Kaz share £270 in the ratio Jeff : Kaz = 2.6 : 1

How much **more** than Kaz does Jeff get?**[3 marks]**

Answer £ _____

11. No.7

Jeff and Kaz share £270 in the ratio Jeff : Kaz = 2.6 : 1

How much **more** than Kaz does Jeff get?**[3 marks]**

Answer £ _____

12. No.8

The heel of a shoe exerts a pressure of 198 pounds per square inch.

Convert this pressure into kilograms per square centimetre.

Use

1 pound = 0.45 kilograms

1 square inch = 6.25 square centimetres

[3 marks]

Answer _____ kg/cm^2