Ratios Past Paper Questions GCSE OCR - Calculator

1.

(a) In a sale, the ratio of the sale price to the normal price is 3 : 5.
Mary buys a jacket in the sale.
Its normal price is £45.

What is the sale price of the jacket?

(a) £ _____ [2]

(b) On the final day of the sale, prices are reduced further.
The price of a rucksack on the final day is £12; its normal price is £32.

Write the ratio of the final price to the normal price.
Give your answer in its simplest form.

(b) _____ [2]

2.

Margie makes blackberry and apple jam.
Her recipe uses 2 kg of blackberries and 750 g of apples.
This makes 6 jars of jam.

(a) Show that the ratio of blackberries to apples, in its simplest terms, is 8 : 3.
Explain clearly how you obtain the answer.

[2]

(b) Margie has 3 kg of blackberries.
She uses them all to make blackberry and apple jam.

(i) What weight of apples does she use?
Give the units of your answer.

(b)(i) _____ [3]

(ii) How many jars of the jam does she make?

(ii) _____ [1]

3.

(a) The students in group 11Y are raising money for charity.
They have decided to share the money between three charities: Sustrans, Oxfam and the NSPCC.
The ratio Sustrans : Oxfam : NSPCC is 1 : 2 : 5.

    (i) Sally is a member of group 11Y.
She raises £72.

    How much of this money will go to the NSPCC?

<div align="right">(a)(i) £ _____ [2]</div>

    (ii) £360 goes to Oxfam from group 11Y.

    How much money did group 11Y raise altogether?

<div align="right">(ii) £ _____ [2]</div>

4.

In triangle ABC,

- the sizes of the angles A, B and C are in the ratio 2 : 3 : 5,

- the length of the longest side is 6 cm,

- the angles add up to 180°.

Calculate the length of the shortest side of triangle ABC.
Use this to show that the ratio of the sides is not the same as the ratio of the angles.   **[7]**
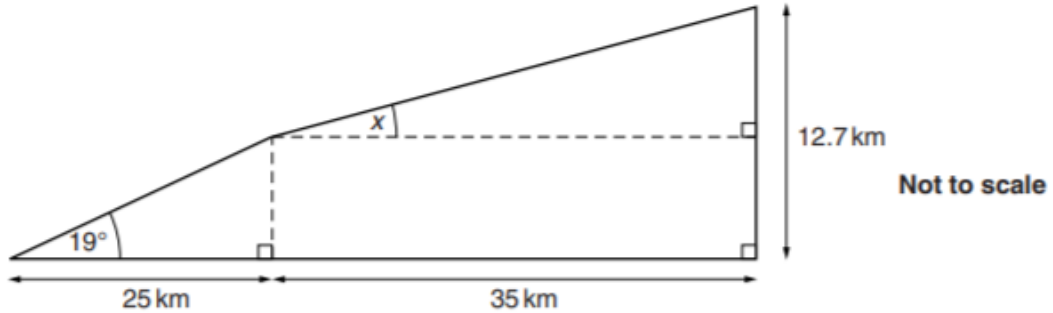
5.

An aircraft flew from Amsterdam to Singapore.

(a) On the flight there were 325 passengers.
The ratio   adults : children   on this flight was 23 : 2.

How many children were on this flight?

(a) _____ **[2]**

(b) As the aircraft left Amsterdam, at sea level, it climbed at an angle of 19° to the horizontal until it was above a point 25 km from Amsterdam.
It then changed the angle of climb until its height above sea level was 12.7 km.
The aircraft was then above a point a further 35 km from Amsterdam, as shown in the diagram.

x

19°

12.7 km

Not to scale

25 km   35 km

Calculate *x*, the angle of climb on the second stage of its journey.
Show your method clearly.

(b) _____ ° **[5]**

6.

(a) Sarah's height is 1.56 m.
     David's height is 180 cm.

     Express the ratio Sarah's height : David's height in its simplest form.

     (a) _____ : _____ **[3]**

(b) Sarah and David share the running costs of their car in the ratio 3 : 2.
     One year, the running costs for the car are £3700.

     Calculate how much they each pay.

     (b) Sarah £ _____

     David £ _____ **[3]**

7.

Caroline and Helen share a job in the ratio 3 : 2.

(a) Caroline works for 24 hours a week.

Calculate how many hours a week Helen works.

(a) .... hours **[2]**

(b) The annual pay for the whole job is £26 000.

Work out the annual pay for Caroline and for Helen.

(b) Caroline £ ....

Helen £ .... **[3]**

8.

Samira and Joanne share their living costs in the ratio 3 : 2.

(a) The rent for their flat for a month is £700.

Work out how much of this rent they each pay.

(a) Samira £ ....

Joanne £ .... **[3]**

(b) For one gas bill, Joanne pays £84 for her share.

How much was the whole gas bill?

(b) £ .... **[3]**

9.

On a packet of brown rice it says:

When 60g of brown rice is cooked it will weigh 145g.

(a) Katy has 100g of brown rice.

What will the rice weigh when it is cooked?

(a) .... g [2]

(b) Pali needs 400g of cooked rice for a recipe.

What weight of brown rice should he cook?

(b) .... g [2]

(c) Write the ratio 60:145 in the form 1:n, where n is a fraction in its simplest form.

(c) 1: .... [2]

10.

Sonja and Ben are gymnasts.

(a) On Tuesday Sonja practised for 40 minutes and Ben practised for 48 minutes.

Write the ratio of Sonja's practice time to Ben's practice time.
Give your answer in its simplest form.

(a) _____ [2]

(b) On Wednesday they spent a total of 140 minutes practising.
The ratio of Sonja's time to Ben's time was 4 : 3.

Work out how long they each spent practising on Wednesday.

(b) Sonja _____ minutes

Ben _____ minutes [2]

11.

(a) Debi makes bread.
She always uses brown flour and white flour in the ratio 2 : 1.

(i) For a medium loaf of bread she needs 420 g of flour altogether.

How much brown flour does she need for a medium loaf?

(a)(i) _____ g **[2]**

(ii) For a large loaf she uses 360 g of brown flour.

How much flour does she use altogether for a large loaf?

(ii) _____ g **[2]**

(b) Tim makes a medium loaf using wholemeal flour and white flour.
He uses 260 g of wholemeal flour and 160 g of white flour.

Write the ratio

    wholemeal flour : white flour

that Tim uses.
Give your answer in its simplest form.

(b) _____ **[2]**

12.

(a) Joe and Pam planted crocus bulbs in their gardens.
They shared a bag of 250 crocus bulbs.
The table shows the colour of the flower from each bulb.

	Yellow	Purple	White	Totals
Joe	64	40		125
Pam	56		32	125
Totals	120			250

(i) Complete the table.   **[3]**

(ii) Write the ratio 64 : 56 as simply as possible.

(a)(ii) _____ **[1]**

(b) Sumita bought a pack of 60 crocus bulbs which produced Yellow, Purple or White flowers.
The ratio Yellow : Purple : White was 7 : 5 : 3.

How many of the 60 bulbs produced White flowers?

(b) _____ **[3]**

13.

(a) Express the ratio 5 : 7 in the form 1 : n.

(a) .... **[1]**

(b) Express this ratio in its simplest form.

56 minutes : 2 hours

(b) .... **[3]**

14.

(a) Mary is knitting a cardigan for herself and one for her young sister Tasha.
The amounts of wool needed for Mary's cardigan and Tasha's cardigan are in the ratio 5 : 3.

    (i) Mary needs 24 balls of wool in total for both cardigans.

       How many balls of wool are needed for Tasha's cardigan?

                                    (a)(i) .... balls **[2]**

    (ii) Mary takes 6 weeks to knit Tasha's cardigan.
She knits for the same amount of time each week.

       How many weeks should she expect to take to knit her own cardigan?

                                      (ii) .... weeks **[2]**

(b) Anya takes 20 minutes to knit one row of her cardigan.
Sally takes 16 minutes to knit one row of her cardigan.
They both start knitting a new row at 1 pm.
They carry on knitting.

    What is the next time that they both start a new row together?

                                      (b) .... **[3]**

15.

4

(a) Divide £160 in the ratio 1 : 4.

(a) £_____ £_____ **[2]**

(b) A, B and C share some money in the ratio 4 : 5 : 7.
C gets £600 more than B.

How much money do they have altogether?

(b) £_____ **[3]**