

# Ratio - Sharing

A collection of 9-1 Maths GCSE Sample and Specimen questions from AQA, OCR, Pearson-Edexcel and WJEC Eduqas.

|              |  |
|--------------|--|
| Name:        |  |
| Total Marks: |  |

1. Write 40 : 2000 as a ratio in its simplest form.

..... : ..... [2]

2. Two people share £350 in the ratio 1 : 6.  
Calculate each share.

£ ..... £ ..... [2]

3. Peter makes a large amount of pink paint by mixing red and white paint in the ratio 2 : 3.

Red paint costs £80 per 10 litres.

White paint costs £5 per 10 litres.

Peter sells his pink paint in 10-litre tins for £60 per tin.

Calculate how much profit he makes for each tin he sells.

£ ..... [5]

4. Eva's camera takes photos with width and height in the ratio 3 : 2.

Photos can be printed in the following sizes.

20 cm by 16 cm, 14 cm by 10 cm, 24 cm by 16 cm, 12 cm by 8 cm

Eva says

*"Only two of these sizes have the same ratio as my photos!"*

Which sizes have the same ratio as her photos?

[2]

5. Write 45 : 15 as a ratio in its simplest form.

..... : ..... [1]

6. Divide 32 in the ratio 5 : 3.

..... [3]

7. The angles in a triangle are in the ratio 1 : 2 : 3.

Neil says

*This is a right-angled triangle.*

Is Neil correct?

Show your reasoning.

[3]

8. Abi has a bag containing black counters and white counters.

The ratio of black to white counters is 1 : 2.

Abi takes one of these counters at random.

What is the probability that it is black?

..... [1]

9. The table shows the ratio of teachers to children needed for two activities.

|                 | <b>teachers : children</b> |
|-----------------|----------------------------|
| <b>Climbing</b> | 1 : 4                      |
| <b>Walking</b>  | 1 : 9                      |

(a) There are 7 teachers to take children climbing.

What is the greatest number of children that can go climbing?

[1]

(b) 49 children want to go walking.

What is the smallest number of teachers needed?

[1]

10. White paint costs £2.80 per litre.

Blue paint costs £3.50 per litre.

White paint and blue paint are mixed in the ratio 3 : 2

Work out the cost of 18 litres of the mixture.

[4]

11. There are only black pens and green pens in a box.

The ratio of the number of black pens in the box to the number of green pens in the box is 2 : 5

What fraction of the pens are black?

..... [1]

12. In a company, the ratio of the number of men to the number of women is 3:2

40% of the men are under the age of 25

10% of the women are under the age of 25

What percentage of all the people in the company are under the age of 25?

.....%

[4]

13. Frank, Mary and Seth shared some sweets in the ratio 4 : 5 : 7

Seth got 18 more sweets than Frank.

Work out the total number of sweets they shared.

..... [3]

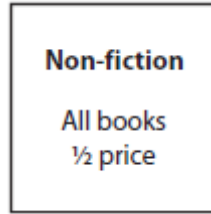
14. Helen has 80 books to sell.

Each book is Fiction or Non-fiction.

The ratio of the number of Fiction books to the number of Non-fiction books is 3:1

Each book has a normal price of £10

Helen reduces the price of all the Non-fiction books.



Helen sells all 80 books.

Work out the total amount of money Helen will receive.

£..... [4]

15. A model plane has a length of 17cm.

The scale of the model is 1:200

Work out the length of the real plane.

Give your answer in metres.

..... metres [2]

16. There are 35 pens in a box.

15 of the pens are green.

The rest of the pens are red.

Write down the ratio of the number of green pens to the number of red pens.

Give your ratio in its simplest form.

..... [2]

17. The ratio of the number of boys to the number of girls in a school is 4:5

There are 95 girls in the school.

Work out the total number of students in the school.

..... [3]

18. At a school

$$\text{number of boys} : \text{number of girls} = 9 : 7$$

There are 116 more boys than girls.

Work out the total number of students at the school.

[3]

19. In Scotland, squirrels are red or grey in the ratio red : grey =  $1 : 2\frac{1}{2}$

In Scotland there are 120 000 red squirrels.

How many squirrels are there altogether in Scotland?

[2]

20. Here is some information about a group of children.

|              | Boys | Girls |
|--------------|------|-------|
| Left-handed  | 3    | 8     |
| Right-handed | 12   | 20    |

Write down the number of left-handed girls to right-handed girls as a ratio.

Give your answer in its simplest form.

[1]

21. A drink is mixed in the ratio

$$\text{lemonade} : \text{orange} : \text{cranberry} = 6 : 3 : 2$$

What fraction is orange?

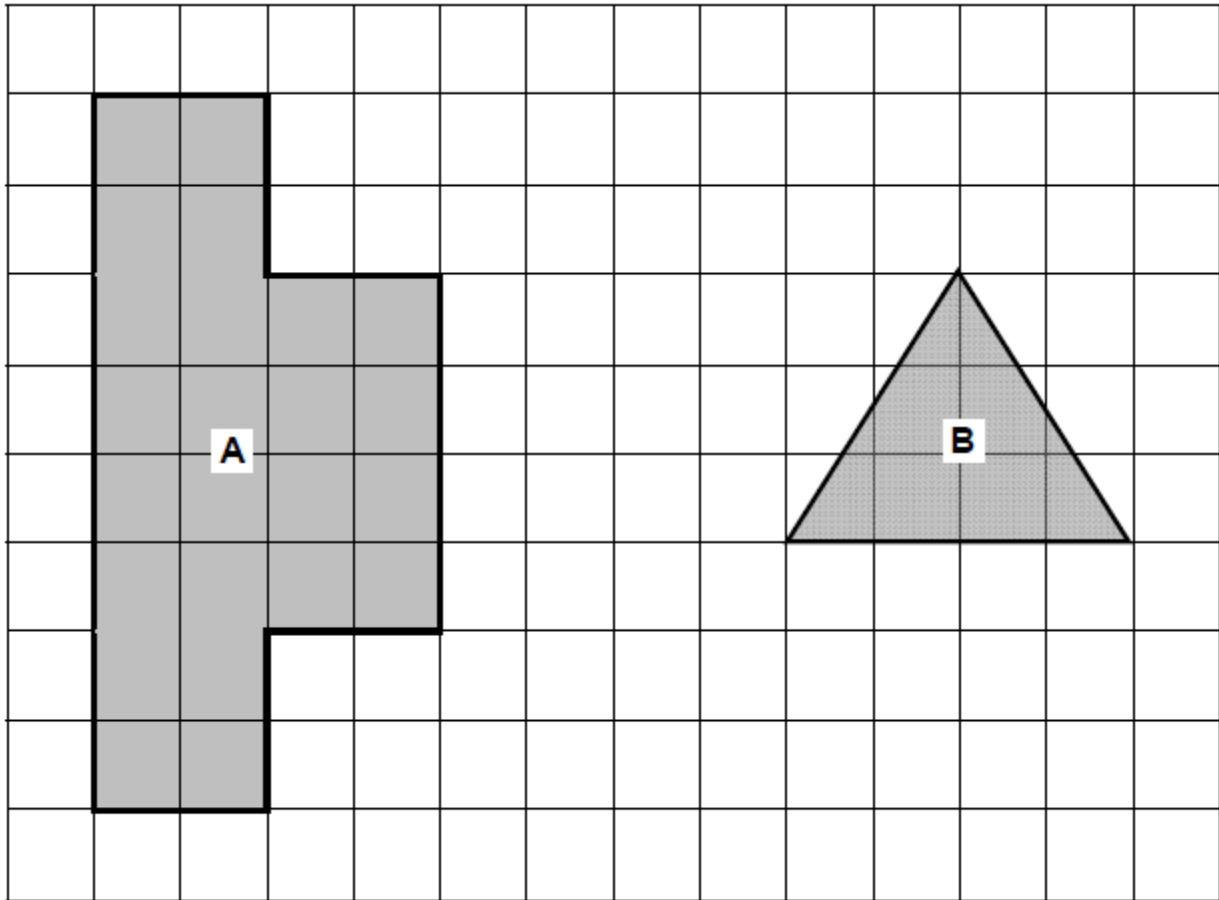
Circle your answer.

[1]

$$\frac{3}{8} \qquad \frac{2}{11} \qquad \frac{3}{11} \qquad \frac{6}{11}$$

22. Work out

area of shape A : area of shape B



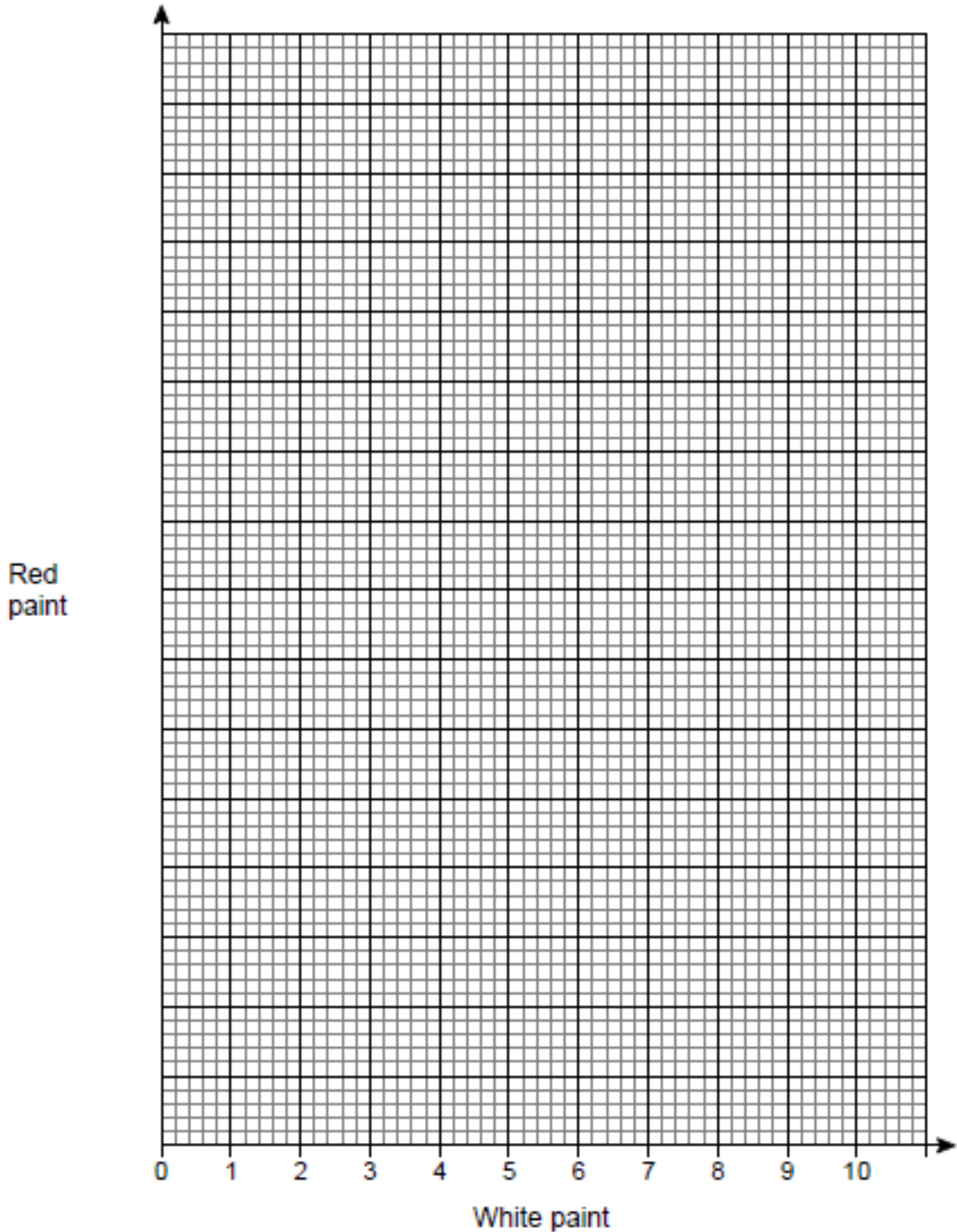
Give your answer in its simplest form.

[3]

23. White paint and red paint are mixed together in the ratio 2 : 3

(a) Draw a graph that can be used to work out the amount of red paint needed given the amount of white paint.

Your graph must show up to 10 litres of white paint.



[3]

(b) How much red paint needs to be mixed with 9 litres of white paint?

[1]

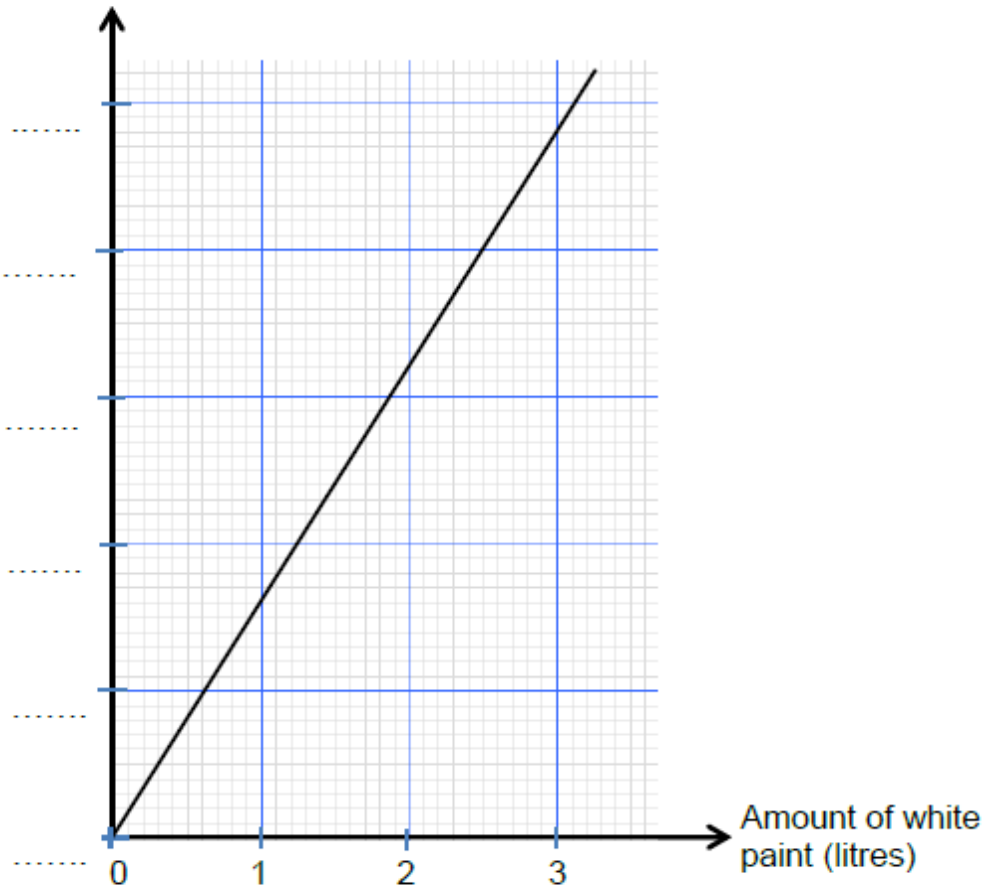


24. Cherry Blossom paint is made by mixing red and white paint in a certain ratio.

4 litres of red paint is used to make 9 litres of Cherry Blossom paint.

The diagram below shows the relationship between the amount of red paint and the amount of white paint needed to make Cherry Blossom paint.

Amount of red paint (litres)



Write down the correct scale on the 'Amount of red paint (litres)' axis.

You must put a value on each of the dotted lines on the axis.

You must show all your working to support your answer.

[4]

25. There are 64 cards in a pack.

Each card is either red or black.

The ratio of the number of red cards to the number of black cards is 1 : 1

8 red cards are removed from the pack.

Find the ratio of the number of red cards now in the pack to the number of black cards now in the pack.

Give your answer in its simplest form.

[3]

26. On a farm

the number of cows and the number of sheep are in the ratio 6 : 5

the number of sheep and the number of pigs are in the ratio 2 : 1

The total number of cows, sheep and pigs on the farm is 189

How many sheep are there on the farm?

[3]

27. There are 28 red pens and 84 black pens in a bag.

Write down the ratio of the number of red pens to the number of black pens.

Give your ratio in its simplest form.

[2]

28. In a breakfast cereal, 40% of the weight is fruit.

The rest of the cereal is oats.

(a) Write down the ratio of the weight of fruit to the weight of oats.

Give your answer in the form 1 : n.

..... [2]

A different breakfast cereal is made using only fruit and bran.

The ratio of the weight of fruit to the weight of bran is 1 : 3

(b) What fraction of the weight of this cereal is bran?

..... [1]

## CREDITS AND NOTES

| Q  | Awarding Body | Q  | Awarding Body   | Q  | Awarding Body   |
|----|---------------|----|-----------------|----|-----------------|
| 1  | OCR           | 11 | Pearson Edexcel | 21 | AQA             |
| 2  | OCR           | 12 | Pearson Edexcel | 22 | AQA             |
| 3  | OCR           | 13 | Pearson Edexcel | 23 | AQA             |
| 4  | OCR           | 14 | Pearson Edexcel | 24 | WJEC Eduqas     |
| 5  | OCR           | 15 | Pearson Edexcel | 25 | Pearson Edexcel |
| 6  | OCR           | 16 | Pearson Edexcel | 26 | Pearson Edexcel |
| 7  | OCR           | 17 | Pearson Edexcel | 27 | Pearson Edexcel |
| 8  | OCR           | 18 | AQA             | 28 | Pearson Edexcel |
| 9  | AQA           | 19 | AQA             |    |                 |
| 10 | AQA           | 20 | AQA             |    |                 |

### Notes:

These questions have been retyped from the original sample/specimen assessment materials and whilst every effort has been made to ensure there are no errors, any that do appear are mine and not the exam board s (similarly any errors I have corrected from the originals are also my corrections and not theirs!).

Please also note that the layout in terms of fonts, answer lines and space given to each question does not reflect the actual papers to save space.

These questions have been collated by me as the basis for a GCSE working party set up by the GLOW maths hub - if you want to get involved please get in touch. The objective is to provide support to fellow teachers and to give you a flavour of how different topics "could" be examined. They should not be used to form a decision as to which board to use. There is no guarantee that a topic will or won't appear in the "live" papers from a specific exam board or that examination of a topic will be as shown in these questions.

### Links:

AQA <http://www.aqa.org.uk/subjects/mathematics/gcse/mathematics-8300>

OCR <http://ocr.org.uk/gcsemaths>

Pearson Edexcel <http://qualifications.pearson.com/en/qualifications/edexcel-gcses/mathematics-2015.html>

WJEC Eduqas <http://www.eduqas.co.uk/qualifications/mathematics/gcse/>

### Contents:

This version contains questions from:

AQA – Sample Assessment Material and Practice set 1

OCR – Sample Assessment Material and Practice set 1

Pearson Edexcel – Sample Assessment Material, Specimen set 1 and Specimen set 2.

WJEC Eduqas – Sample Assessment Material

