

GCSE QUESTIONS

Q1. NON-CALCULATOR

There are 78 red counters and 52 yellow counters in a bag.

Write the ratio of the number of red counters to the number of yellow counters.
Give your ratio in its simplest form.

.....

(Total for question = 2 marks)

Q2. NON-CALCULATOR

Write down the ratio of 450 grams to 15 grams. Give your answer in its simplest form.

.....

(Total for question = 2 marks)

Q3. NON-CALCULATOR

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?

.....

(Total for question = 1 mark)

Q4. NON-CALCULATOR

There are only red sweets and yellow sweets in a bag. $\frac{2}{5}$ of the sweets are red.

Write down the ratio of red sweets to yellow sweets.

.....

(Total for question = 1 mark)

Q5. NON-CALCULATOR

Annie and Lily share some money in the ratio 4 : 3

(a) What fraction of the money does Lily get?

.....

(1)

Rosie and Dan share some sweets.

$$\frac{1}{4}$$

Dan gets $\frac{1}{4}$ of the sweets.

(b) Write down the ratio of the number of sweets Rosie gets to the number of sweets Dan gets.

.....
(1)
(Total for question = 2 marks)

Q6. NON-CALCULATOR

A path is made of white tiles and grey tiles.

$$\frac{1}{4}$$

$\frac{1}{4}$ of the tiles are white.

(a) Write down the ratio of white tiles to grey tiles.

.....
(1)

There is a total of 56 tiles.

(b) Work out the number of grey tiles.

.....
(2)
(Total for question = 3 marks)

Q7. NON-CALCULATOR

There are 35 pens in a box.

15 of the pens are green.

The rest of the pens are red.

(a) What fraction of the pens in the box are red?

.....
(1)

(b) Write down the ratio of the number of green pens to the number of red pens.
Give your ratio in its simplest form.

.....
(2)
(Total for question = 3 marks)

Q8. NON-CALCULATOR

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.

.....
(Total for question = 3 marks)

Q9. NON-CALCULATOR

In a box of pens, there are

three times as many red pens as green pens
and two times as many green pens as blue pens.

For the pens in the box, write down the ratio of the number of red pens to the number of green pens to the number of blue pens.

.....
(Total for question = 2 marks)

Q10. NON-CALCULATOR

There are some chocolates in a box.

$\frac{1}{4}$ of the chocolates contain nuts. The rest of the chocolates do not contain nuts.

Write down the ratio of the number of chocolates that contain nuts to the number of chocolates that do not contain nuts.

Give your answer in the form 1 : n

.....
(Total for question = 2 marks)

Q11. NON-CALCULATOR

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 .

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)

(Total for question is 3 marks)

Q12. NON-CALCULATOR

A farmer has 20 boxes of eggs.
There are 6 eggs in each box.

Write, as a ratio, the number of eggs in two boxes to the total number of eggs.
Give your answer in its simplest form.

.....

(Total for question = 2 marks)

Q13. NON-CALCULATOR

Azmol, Ryan and Kim each played a game.

Azmol's score was four times Ryan's score.
Kim's score was half of Azmol's score.

Write down the ratio of Azmol's score to Ryan's score to Kim's score.

.....

(Total for question = 2 marks)

Q14. NON-CALCULATOR

Kiaria is 7 years older than Jay. Martha is twice as old as Kiaria. The sum of their three ages is 77

Find the ratio of Jay's age to Kiaria's age to Martha's age.

.....

(Total for question = 4 marks)

Q15. NON-CALCULATOR

A cafe sells cakes and scones. On Tuesday, the ratio of the number of cakes sold to the number of scones sold was 5 : 2. On Tuesday, the cafe sold 80 scones.

How many cakes were sold on Tuesday?

.....

(Total for question = 2 marks)

Q16. NON-CALCULATOR

Neal, Craig and Keith are cousins. Their ages are in the ratio 17 : 14 : 9

Craig is 42 years old. How old are Neal and Keith?

Neal years

Keith years

(Total for question = 3 marks)

Q17. NON-CALCULATOR

288 chocolates are put into three boxes.

The chocolates are put into a small box, a medium box and a large box in the ratio 1 : 3 : 8

Work out the number of chocolates in each box.

small box

medium box

large box

(Total for question = 3 marks)

Q18. NON-CALCULATOR

Harry, Regan and Kelan share £450 in the ratio 2 : 5 : 3

How much money does Kelan get?

£

(Total for question = 2 marks)

Q19. NON-CALCULATOR

In a tin of baked beans,

weight of beans : weight of tomatoes : weight of other ingredients = 3 : 2 : 1

There are 150 g of tomatoes in the tin. Work out the weight of the beans.

..... g

(Total for question = 2 marks)

Q20. NON-CALCULATOR

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.

.....

(Total for question = 3 marks)

Q21. NON-CALCULATOR

The table shows a cricket club's income in 2016 from a fete, a quiz and membership fees.

	Income	
Fete	£250	
Quiz	Entry fees	13 at £5 each
	Refreshments	£35
Membership fees	25 at £20 each	

Express as a ratio

the income from the fete to the income from the quiz to the income from membership fees.

Give your ratio in its simplest form.

.....

(Total for question = 3 marks)

Q22. NON-CALCULATOR

Helen has 80 books to sell.

Non-fiction
All books
 $\frac{1}{2}$ price

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.

£

(Total for question = 4 marks)

Q23. NON-CALCULATOR

There are some red counters and some yellow counters in a bag.

There are 30 yellow counters in the bag.

The ratio of the number of red counters to the number of yellow counters is 1:6

(a) Work out the number of red counters in the bag.

.....

(2)

Riza puts some more red counters into the bag.

The ratio of the number of red counters to the number of yellow counters is now 1:2

(b) How many red counters does Riza put into the bag?

.....

(2)

(Total for question is 4 marks)

Q24. NON-CALCULATOR

Alan, Bispah and Chan share a sum of money.

Alan gets $\frac{1}{8}$ of the money. Bispah gets $\frac{1}{2}$ of the money.

Chan gets the rest of the money. Alan gets £2.50

(a) Work out how much money Bispah gets.

£
(2)

(b) Find the ratio

amount of money Alan gets : amount of money Chan gets

Give your answer in the form $a : b$ where a and b are whole numbers.

.....
(3)
(Total for question = 5 marks)

Q25. NON-CALCULATOR

Daniel bakes 420 cakes. He bakes only vanilla cakes, banana cakes, lemon cakes and chocolate cakes.

$\frac{2}{7}$ of the cakes are vanilla cakes. 35% of the cakes are banana cakes.

The ratio of the number of lemon cakes to the number of chocolate cakes is 4:5

Work out the number of lemon cakes Daniel bakes.

.....
(Total for question = 5 marks)

Q26. NON-CALCULATOR

Only blue vans and white vans are made in a factory.

The ratio of the number of blue vans to the number of white vans is 4 : 3

(a) Write down the fraction of vans that are blue.

.....
(1)

For blue vans,

the number of small vans : the number of large vans = 3 : 5

(b) Work out the fraction of the number of vans made in the factory that are blue and large.

.....
(3)
(Total for question = 4 marks)

Q27. NON-CALCULATOR

On Saturday, some adults and some children were in a theatre.

The ratio of the number of adults to the number of children was 5 : 2

Each person had a seat in the Circle or had a seat in the Stalls.

$\frac{3}{4}$ of the children had seats in the Stalls. 117 children had seats in the Circle. There are exactly 2600 seats in the theatre.

On this Saturday, were there people on more than 60% of the seats? You must show how you get your answer.

(Total for question = 5 marks)

Q28. NON-CALCULATOR

There are only red counters, blue counters and green counters in a bag.

number of red counters : number of blue counters : number of green counters = 1 : 3 : 7

A counter is going to be taken at random from the bag.

(a) Complete the table below to show each of the probabilities that the counter will be red or blue or green.

Colour	red	blue	green
Probability			

(2)

Jamie takes at random a counter from the bag and records the colour of the counter. He then puts the counter back in the bag.

Jamie does this a number of times. He records a total of 68 blue counters.

(b) Work out an estimate for the total number of times Jamie takes a counter from the bag.

.....
(2)
(Total for question = 4 marks)

Q29. NON-CALCULATOR

The points *A*, *B*, *C* and *D* lie in order on a straight line.

$$AB : BD = 1:5$$

$$AC : CD = 7:11$$

Work out $AB : BC : CD$

..... : :

(Total for question = 3 marks)

Q30. NON-CALCULATOR

Given that

$$a : b = 8 : 5 \quad \text{and} \quad b : c = 3 : 4$$

find the ratio

$$a : b : c$$

Give your answer in its simplest form.

.....
(Total for question = 3 marks)

Q31. NON-CALCULATOR

Anna and Bill share some money in the ratio 2 : 5

Anna gets £ A

Bill gets £ B

Carl and Donna share twice as much money as Anna and Bill share.

They share the money in the ratio 3 : 1

Carl gets £ C

Donna gets £ D

Find $A : B : C : D$. Give your answer in its simplest form.

.....
(Total for question = 3 marks)

Q32. NON-CALCULATOR

In a village

the number of houses and the number of flats are in the ratio 7 : 4

the number of flats and the number of bungalows are in the ratio 8 : 5

There are 50 bungalows in the village.

How many houses are there in the village?

.....
(Total for question = 3 marks)

Q33. NON-CALCULATOR

There are only blue pens, green pens and red pens in a box.

The ratio of the number of blue pens to the number of green pens is 2 : 5

The ratio of the number of green pens to the number of red pens is 4 : 1

There are less than 100 pens in the box.

What is the greatest possible number of red pens in the box?

.....
(Total for question = 3 marks)

Q34. NON-CALCULATOR

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?

.....
(Total for question = 3 marks)

Q35. NON-CALCULATOR

White shapes and black shapes are used in a game.

Some of the shapes are circles. All the other shapes are squares.

The ratio of the number of white shapes to the number of black shapes is 3:7

The ratio of the number of white circles to the number of white squares is 4:5

The ratio of the number of black circles to the number of black squares is 2:5

Work out what fraction of all the shapes are circles.

.....
(Total for question = 4 marks)

Q36. NON-CALCULATOR

Given that

$$2x - 1 : x - 4 = 16x + 1 : 2x - 1$$

find the possible values of x .

.....
(Total for question = 5 marks)

Q37. CALCULATOR ALLOWED

(a) Write £4.20 : £1.40 : £7 in its simplest form.

.....

(2)

(b) Write a number on the dotted line to complete the statement $6 : 4 = \dots : 1$

(1)

(Total for question = 3 marks)

Q38. CALCULATOR ALLOWED

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.

.....

(Total for question = 3 marks)

Q39. CALCULATOR ALLOWED

Raya buys a van for £8500 plus VAT at 20%

Raya pays a deposit for the van.

She then pays the rest of the cost in 12 equal payments of £531.25 each month.

Find the ratio of the deposit Raya pays to the total of the 12 equal payments.

Give your answer in its simplest form.

.....

(Total for question = 5 marks)

Q40. CALCULATOR ALLOWED

Robert makes 50 litres of green paint by mixing litres of yellow paint and litres of blue paint in the ratio 2 : 3

Yellow paint is sold in 5 litre tins. Each tin of yellow paint costs £26

Blue paint is sold in 10 litre tins. Each tin of blue paint costs £48

Robert sells all the green paint he makes in 10 litre tins. He sells each tin of green paint for £66.96

Work out Robert's percentage profit on each tin of green paint he sells.

..... %
(Total for question = 5 marks)

Q41. CALCULATOR ALLOWED

Solid **A** and solid **B** are mathematically similar.

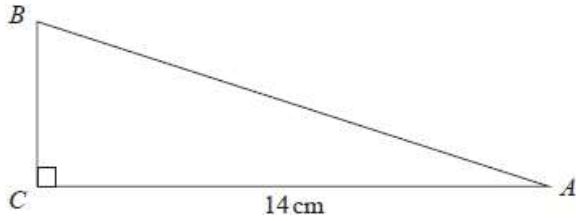
The ratio of the surface area of solid **A** to the surface area of solid **B** is 4:9

The volume of solid **B** is 405cm^3 . Show that the volume of solid **A** is 120cm^3 .

(Total for question = 3 marks)

Q42. CALCULATOR ALLOWED

ABC is a right-angled triangle.



$AC = 14$ cm.
Angle $C = 90^\circ$

size of angle B : size of angle $A = 3 : 2$

Work out the length of AB .

Give your answer correct to 3 significant figures.

..... cm

(Total for question = 4 marks)