

8300

GCSE MATHEMATICS

Foundation and Higher tier – Questions by Topic

Number

Finding the percentage an amount has been changed by

v1.0

Name _____

Materials

For this paper you must have:

- Mathematical instruments

Information

- The marks for questions are shown in brackets

Advice

- In all calculations, show clearly how you work out your answer

Questions 1 to 13 are **foundation** tier only

For question 1 you must **NOT** use a calculator.



Q1.

Work out the percentage increase from 80 to 280

(Total 3 marks)

For questions 2 to 13 you may use a calculator.



Q2.

Increase 5400 by 27%

(Total 2 marks)

Q3.

Jack sees the bicycle he wants to buy in two shops.

Bye-cycles



Price without VAT £130

VAT is 20%

Just Bykes



Normal price £195

Now $\frac{1}{4}$ off

VAT is included

In which shop is the bicycle cheaper?
You **must** show your working.

(Total 5 marks)

Q4.

A train ticket costs £23.50
The price increases by 6%.
Felix has £100.
Can Felix buy four tickets at the new price?

(Total 4 marks)

Q5.

In 1981 the population of England was 46 million.
In 2011 the population of England was 53 million.
Work out the increase in population as a percentage of the 1981 figure.

(Total 3 marks)

Q6.

A company receives and posts out orders from Monday to Friday.
At the start of the week shown, no orders were waiting to be posted out.

Day	Number of orders	
	received	posted out
Monday	84	53
Tuesday	72	74
Wednesday	51	79
Thursday	60	53
Friday	47	47

- (a) How many orders have **not** been posted out by the end of Monday? (1)
- (b) Have all the orders been posted out by the end of the week?
You **must** show your working. (2)
- (c) The company receives 1250 orders in December.
It has a January sale.
It receives 1430 orders in January.
Work out the percentage increase in orders. (3)
- (Total 6 marks)**

Q7.

Here are the ingredients to make 8 biscuits.

75 g flour
50 g sugar
40 g butter
2 egg yolks

Work out the ingredients to make 20 biscuits.

(Total 3 marks)

Q8.

Increase 400 by 37%

(Total 2 marks)

Q9.

The table shows information about the population of a city.

Population in 2001	Population in 2011
420 000	480 000

Liam claims,

“From 2011 to 2021 the population of the city will increase by the same percentage as from 2001 to 2011”

He works out,

$$\begin{aligned}\text{population increase from 2001 to 2011} &= 480\,000 - 420\,000 \\ &= 60\,000 \\ \text{population in 2021} &= 480\,000 + 60\,000 \\ &= 540\,000\end{aligned}$$

Does the population of 540 000 match his claim?

You **must** show your working.

(Total 3 marks)

Q10.

Here is an advert.

Hair Salon	
Trim and Colour	£65.50
Wash and Dry	£15.50
Perm	£68.00
Special Offer 10% off	

Jen has a Trim and Colour.
She uses the special offer.
How much does she pay?

(Total 2 marks)

Q11.

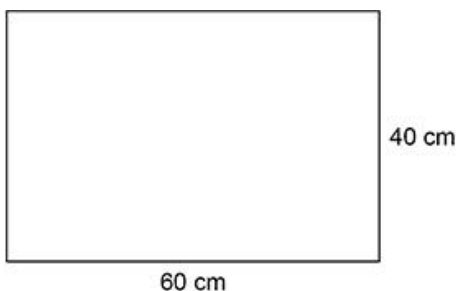
Increase 200 by 17%

(Total 2 marks)

Q12.

A rectangle has length 60 cm and width 40 cm

Not drawn accurately



The length decreases by 15%

The width decreases by 10%

Sue says,

“The perimeter decreases by 25% because 15% + 10% is 25%”

Is she correct?

You **must** show calculations to support your answer.

(Total 4 marks)

Q13.

Carly's total annual pay = salary + bonus

	Salary	Bonus
Last year	£26 000	£4000
This year	6% increase	9% decrease

Work out the percentage change in her total annual pay.
State whether it is an increase or a decrease.

(Total 4 marks)

Questions 14 to 28 are **higher** tier only

For questions 14 to 20 you must **NOT** use a calculator.



Q14.

Laura works in a shop.

The table shows the number of hours she works on two weekends.

	Saturday	Sunday
Weekend 1	3	2
Weekend 2	$5\frac{1}{2}$	$3\frac{1}{2}$

Work out the percentage increase in her **total** hours from Weekend 1 to Weekend 2

(Total 3 marks)

Q15.

Circle the calculation that increases 240 by 7.5%

$$240 \times 1.0705$$

$$240 \times 1.705$$

$$240 \times 1.075$$

$$240 \times 1.75$$

(Total 1 mark)

Q16.

A shopkeeper compares the income from sales of a laptop in March and April.

April

Price	$\frac{1}{5}$ more than March
Number sold	$\frac{1}{4}$ less than March

By what fraction does the income from these sales decrease in April?

(Total 3 marks)

Q17.

Increase £190 by 35%

(Total 3 marks)

Q18.

The cash price for a boiler is £2000

Customers can pay the cash price or pay monthly.

Cash Price
£2000

Pay Monthly
60 monthly payments of £40

Work out the percentage increase from the cash price when paying monthly.

(Total 4 marks)

Q19.

Increase 6800 by 12%.

(Total 3 marks)

Q20.

The price of a book is £4
In a sale the price is reduced by 30%
Work out the sale price.

(Total 3 marks)

For questions 21 to 28 you may use a calculator.



Q21.

Post and packing on a parcel is £8.00 for delivery in the UK.
This increases by 40% if the parcel is sent to the USA.
Work out the cost to send the parcel to the USA.

(Total 3 marks)

Q22.

Decrease 390 by 5.5%

(Total 3 marks)

Q23.

Reduce 360 by 12.5%

(Total 2 marks)

Q24.

Here is a formula $F = \frac{X}{Y}$

X **increases** by 25%.

Y **decreases** by 20%.

Work out the percentage increase in F .

(Total 4 marks)

Q25.

Here is a sign in a shop.

SALE
20% OFF ALL ITEMS
TODAY ONLY 10% OFF THE REDUCED PRICE
THAT MEANS YOU SAVE 30%

Is the sign correct?

Tick a box.

Yes

☐

No

☐

Give a reason for your answer.

(Total 1 mark)

Q26.

- (a) Which calculation works out the total amount after decreasing £50 by 8%?
Circle the correct answer.

$$\begin{array}{cccc} \text{£}50 \times 0.08 & \text{£}50 \times 0.92 & \frac{\text{£}50}{0.08} & \frac{\text{£}50}{1.08} \end{array}$$

(1)

- (b) Adrian is going on holiday.
He has two bags.
The mass of one bag is 9 kg
This is 45% of the total mass of the two bags.
What is the mass of his other bag?

(3)

(Total 4 marks)

Q27.

The population of England in 2013 is approximately 53 million.
It is predicted that
the population in 2018 will be 4% more than the population in 2013
and the population in 2023 will be 4% more than the population in 2018.
Work out the predicted population of England in 2023.

(Total 3 marks)

Q28.

- (a) A company receives 1250 orders in December.
It has a January sale.
It receives 1430 orders in January.
Work out the percentage increase in orders.
- (b) The company sends out a questionnaire to customers.
One of the questions is
“How long did your order take to arrive?”

(3)

Write a suitable response section for this question.

(2)

(Total 5 marks)