



## GCSE Foundation/Higher 08

*Number*

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Questions



156 minutes



134 marks

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*Solving numerical problems*

**Q1.** Sophie spent  $\frac{1}{4}$  of her pocket money on magazines.

Then she spent  $\frac{2}{3}$  of what she had left on a present.

She now has £6.

How much pocket money did she start with?

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Answer £ .....

**(Total 4 marks)**

**Q2.**      A market trader bought                      100 loaves                      at 84p each  
    60 packs of muffins                      at £1.10 per pack.

He sold all                      100 loaves                      at £1.20 each  
    40 of the packs of muffins                      at £1.60 per pack.

His target is to make 40% profit altogether.  
 He sells the remaining 20 packs of muffins at a reduced price.

For how much should he sell each of the remaining packs of muffins to meet his target?  
 You **must** show your working.

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Answer £ .....

**(Total 5 marks)**

- Q3.** Alice has £4.  
Billie has twice as much as Alice.

Billie has two-thirds of the amount Chris has.  
The amount Chris has is four-fifths of his age in years.

How old is Chris?

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Answer ..... years

(Total 4 marks)

- Q4.** Bella wants to buy 12 tins of baked beans for a barbeque.  
Two supermarkets have these special offers.

<b>PriceSave</b>
<b>Baked beans</b>
Normal price 50 p
<b>Special offer</b>
30% off all tins

<b>CostCut</b>
<b>Baked beans</b>
Normal price 48 p
<b>Special offer</b>
Pay for 3 tins, get 1 free

Which is cheaper?  
You **must** show your working.

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Answer .....

(Total 5 marks)

- Q5.** A train ticket costs £23.50  
The price increases by 6%.  
Felix has £100.

Can Felix buy four tickets at the new price?

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**(Total 4 marks)**

- Q6.** A bag contains only red, blue and yellow counters.  
There are three times as many blue counters as yellow counters.  
There are 43 counters in the bag.

Some red counters are added to the bag.  
There are now 50 counters in the bag.  
The number of red counters has doubled.

How many yellow counters are in the bag?

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Answer .....

**(Total 3 marks)**

**Q7.** Liz is buying a new car and selling her old car.

Here are three offers for the same model of new car.

**Offer 1**  
New car £10 599  
If old car given to garage  
£3375 off

**Offer 2**  
New car £11 100  
If old car given to garage  
 $\frac{1}{3}$  off

**Offer 3**  
New car £9600  
If old car given to garage  
25% off

Which offer is best?  
You **must** show your working.

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Answer .....

**(Total 5 marks)**

- Q8.** In May, a coat costs £64.  
In June, the May price is rounded to the nearest £10.  
In July, the June price is reduced by 20%.

Ian has £50.

Does he have enough money to buy the coat in July?

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(Total 3 marks)

- Q9.** Last year, 12 students went to the theatre.  
The total cost of the tickets was £240.

This year, 8 students are going.  
The cost of each ticket has increased by 15%.  
They have a total of £200.

Is this enough to buy 8 tickets?  
You **must** show your working.

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(Total 5 marks)

**Q10.** Martha sells jars of jam at a farmers' market.  
 She has 80 jars to sell at £3 each.  
 She sells 50 jars and then reduces the price by 40%.  
 Martha then sells the remaining jars at the reduced price.

It costs her £95 to make the jars of jam.  
 Her target is to make a profit of at least £100.

Does she meet her target?  
 You **must** show your working.

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**(Total 5 marks)**

**Q11.** Barbara uses her car to work as a volunteer driver at her local hospital.  
 She is paid 40 p for every mile she drives.  
 On average she drives 2000 miles each month.

Here is some information about the running costs of Barbara's car.

Fuel consumption	50 miles per gallon
Other running costs	10 pence per mile

(a) Petrol costs £5 per gallon  
 Calculate Barbara's annual fuel bill.

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Answer £ .....

**(2)**



- (b) After paying for fuel and other running costs, Barbara saves the money left over. Barbara is planning to use this money for a holiday that will cost £3000.

Will Barbara have enough money after saving for one year?

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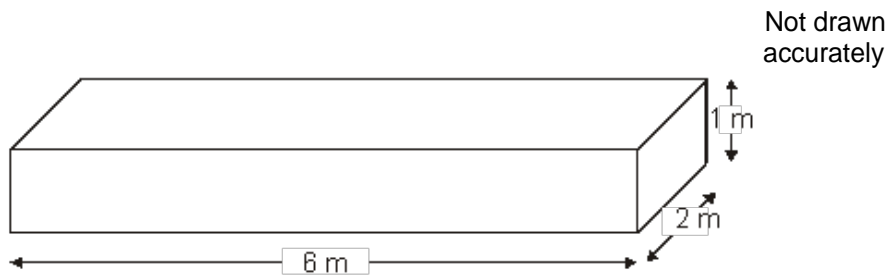
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(4)  
(Total 6 marks)

**Q12.** The shape of a flower bed is a cuboid as shown.



$1 \text{ m}^3$  of soil weighs 1.25 tonnes

A gardener wants to fill the flower bed with soil as cheaply as possible.



**Q13.** In the following calculations each letter represents a different digit.

$$A \times A = BC$$

$$BC \times BC = DEC$$

Which digit does each letter represent?

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Answer    A = .....

              B = .....

              C = .....

              D = .....

              E = .....

**(Total 3 marks)**

**Q14.** (a) Travelling 10 000 kilometres costs £800 for petrol.

How much does it cost to travel 12 500 kilometres?

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Answer £ .....

**(1)**

- (b) Last year Mr Taylor travelled 15 000 km in his car and spent £1200 on petrol.  
This year he expects to travel 20 000 km.  
He estimates that the price of petrol has increased by 10% on what it was last year.

How much should Mr Taylor expect to pay for petrol this year?

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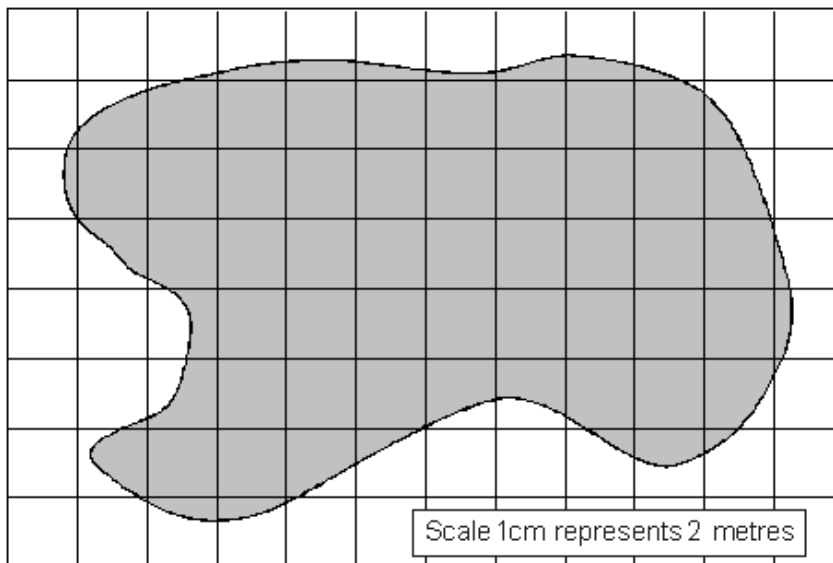
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Answer £ .....

(4)  
(Total 5 marks)

- Q15.** The diagram shows the plan view of a landfill site on a centimetre grid.



- (a) Estimate the number of shaded squares in the diagram.  
You **must** show your working.

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Answer .....

(2)

- (b) A landscape gardener is going to cover the site with turf (grass).

The table shows the cost of turf for different areas (m<sup>2</sup>).

Area of turf (m <sup>2</sup> )	Cost per square metre
40 - 59	£2.83
60 - 130	£2.33
131 - 240	£2.03
241 - 480	£1.78
481 - 640	£1.53
641 - 960	£1.40
961 - 1440	£1.23

On the diagram one square represents  $4\text{m}^2$ .  
 The landscape gardener must buy enough turf to cover the landfill site.

Work out how much he has to pay.  
 You **must** show your working.

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Answer £ .....

(3)  
 (Total 5 marks)

**Q16.** After exercise you can work out your fitness index,  $F$ .

You need to know

your exercise time in seconds ( $T$ )

the number of your pulse beats in three 30 second intervals after you have stopped exercising ( $a$ ,  $b$  and  $c$ ).

Terry is working out his fitness index.

(a) (i) Terry exercises for 3 minutes 30 seconds.

Work out  $T$

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Answer ..... seconds

(1)

(ii) After exercise he obtains  $a = 70$ ,  $b = 55$  and  $c = 45$

Work out  $a + b + c$ .

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Answer ..... pulse beats

(1)

(iii) Work out  $F$ , Terry's fitness index, using the formula

$$F = \frac{50T}{a+b+c}$$

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Answer ..... seconds

(2)

(b) Your fitness grade can be worked out from your fitness index,  $F$ , using this table.

<b>Fitness index, <math>F</math></b>	less than 50	50 to 59	60 to 69	70 to 79	80 to 89	$\geq 90$
<b>Fitness grade</b>	Very poor	Poor	Fair	Good	Excellent	Superb

What is Terry's fitness grade?

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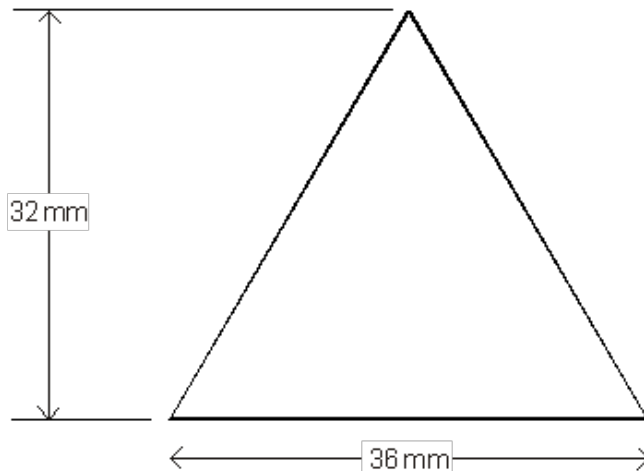
Answer .....

(1)

(Total 5 marks)

**Q17.** The base of a triangle is 36 mm.

The height of the triangle is 32 mm.



Not drawn accurately

- (a) Work out the area of the triangle.

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Answer ..... mm<sup>2</sup>

(2)

- (b) The dimensions of the triangle are given to the nearest millimetre.

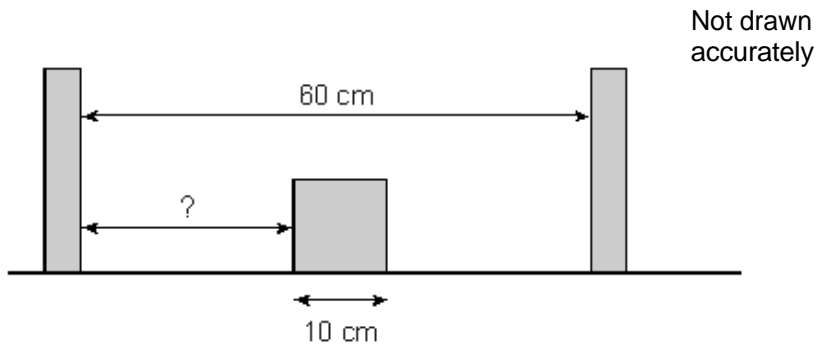
Write down the least possible length of the base of the triangle.

Answer ..... mm

(1)

(Total 3 marks)

- Q18.** Two posts are 60 centimetres apart.  
A block, 10 cm wide, is placed exactly half way between them.



What is the distance between the block and one of the posts?

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Answer .....cm

(Total 2 marks)



**Q19.** Mollie's Cookie Shop sells cookies individually or in bags of 5, 8, 13 or 18.



1  
cookie

**75p**



5  
cookies

**£2.25**



8  
cookies

**£2.99**



13  
cookies

**£3.99**



18  
cookies

**£4.99**

What is the cheapest way to buy exactly 50 cookies?  
You **must** show your working.

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Answer £ .....

**(Total 3 marks)**

**Q20.** Paul and Kelly each buy a can of drink.



Volume        500 ml  
Sugar per can   35 g



Volume        330 ml  
Sugar per can   28 g

Paul drinks 100 ml of the Blackcurrant juice.

Kelly drinks 100 ml of the Fizzy orange.

Who drinks more sugar?

You **must** show your working.

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Answer .....

(Total 3 marks)

**Q21.** The following information is from a table on the side of a packet of biscuits.

NUTRITION INFORMATION		
AVERAGE VALUES	PER BISCUIT	PER 100 g
PROTEIN	0.7 g	5.5 g

Use this information to work out the weight of one biscuit.  
Give your answer to an appropriate degree of accuracy.

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Answer ..... g

**(Total 3 marks)**

**Q22.** Matthew is investigating the costs of using a mobile phone.

He finds that there are two methods of paying for his phone calls.

Contract
£14 a month fixed charge
30 minutes of free calls
then 10p per minute

Pay as you go
No fixed charge
No free minutes
40p per minute

Matthew expects to spend 150 minutes using a mobile phone each month.

Which method is cheaper, 'Contract' or 'Pay as you go'?  
You **must** show your working.

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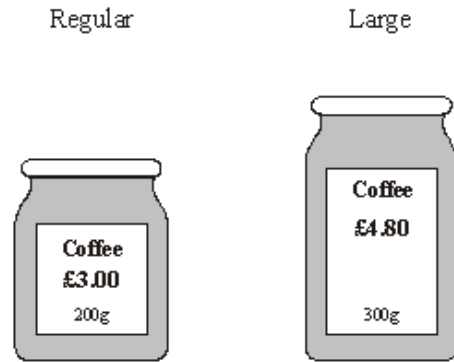
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Answer .....

**(Total 4 marks)**

**Q23.** A supermarket sells jars of coffee of the same brand in two different sizes.



Which jar gives the better value for money?  
You **must** show your working.

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Answer .....

**(Total 3 marks)**

**Q24.** The labels on two types of cereal bar show the following information.

	<b>Fat per 100g</b>	<b>Bar weight</b>	<b>Fat per bar</b>
<b>Fruity bar</b>	17.4 g	62.6 g	
<b>Sports bar</b>	10.3 g		3.4 g

Complete the table.  
You **must** show your working.

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(Total 4 marks)

- Q25.** Jack and Jill want to buy some towels.  
A store displays the following signs.

**January Sales**  
*All towels 60% off*  
Normally ~~£10~~  
January sale price £4



**Today Only**  
**EXTRA**  
**25% off the**  
**January sale price**

That is 85%  
off the  
original price



**Jack**

No, it is only 70%  
off the  
original price



**Jill**

Who is correct, Jack or Jill?  
Explain your answer fully.

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(Total 2 marks)

- Q26.** The weight of a 2p coin is 7g.  
Find the weight of £10 worth of 2p coins.  
Give your answer in kilograms.

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Answer ..... kilograms

(Total 4 marks)

- Q27.** Susan completes a journey in two stages.  
In stage 1 of her journey, she drives at an average speed of 80 km/h and takes 1 hour 45 minutes.

(a) How far does Susan travel in stage 1 of her journey?

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Answer ..... km

(2)

- (b) Altogether, Susan drives 190 km and takes a total time of 2 hours 15 minutes. What is her average speed, in km/h, in **stage 2** of her journey?

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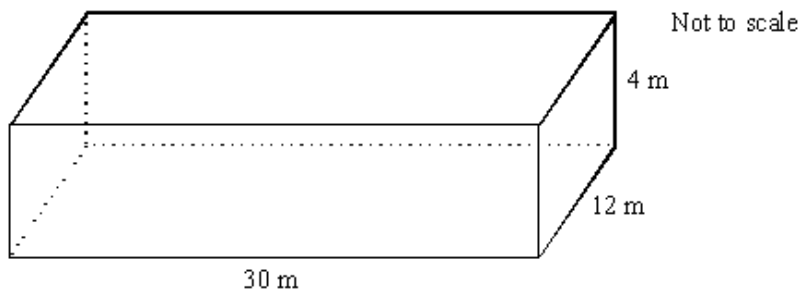
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Answer ..... km/h

(2)  
(Total 4 marks)

- Q28.** A school hall is in the shape of a cuboid.



- (a) The school hall is 30 m long, 12 m wide and 4 m high.
- (i) Calculate the volume of the hall.

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Answer ..... m<sup>3</sup>

(2)

- (ii) Calculate the total area of the **four walls** of the hall.

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Answer ..... m<sup>2</sup>

(3)

- (b) The school buys **ten** 5 litre tins of paint to paint the hall.

The area to be painted is 279 m<sup>2</sup>.

Each tin covers 30 m<sup>2</sup>.

Calculate the percentage of paint used.

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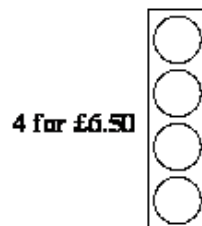
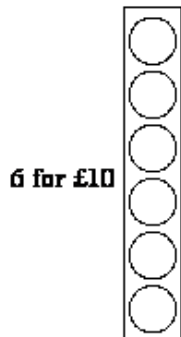
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Answer ..... %

(3)

(Total 8 marks)

- Q29.** A shop sells tennis balls in two different sized packs.





Which pack is better value?  
You **must** show your working.

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Answer .....

(Total 3 marks)

**Q30.** A single room in a hotel in France costs 385 euros for one week.

- (a) The cost of a single room increases by 12% when breakfast is included.

How many euros will it cost for a single room for one week when breakfast is included?

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Answer ..... euros

(3)

- (b) Sunil drives 164 kilometres to the hotel.

His journey takes  $2\frac{1}{2}$  hours.

Work out his average speed.

Give your answer in kilometres per hour.

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Answer ..... kilometres per hour

(2)

(Total 5 marks)

- Q31.** People in the country of Brownland have to pay income tax on the money they earn as shown.

Earnings (£)	Tax to pay
0 – 5000	NIL
Over 5000	20 % on all earnings over £5000

Examples	
Earnings (£)	Tax to pay
4000	NIL
13 000	20 % of £8000

Lynn earns £28 000.

Work out the amount of tax that Lynn pays.

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Answer £ .....

**(Total 3 marks)**

- Q32.** Mike took 400 books to sell at a Saturday market.  
By 3 pm, he had sold 310 books at 80 pence each.

Mike then reduced the selling price of the remaining books to 50 pence each.  
He was left with 24 unsold books which he gave away.

Find the total amount Mike received from selling the books.

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Answer £ .....

**(Total 4 marks)**

**Q33.** Harry drives 182 miles.  
His average speed is 35 miles per hour.

How long does the journey take?  
Give your answer in hours and minutes.

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Answer ..... hours ..... minutes

**(Total 4 marks)**

