GCSE QUESTIONS

Q1. NON-CALCULATOR

Paul organised an event for a charity.

Each ticket for the event cost £19.95. Paul sold 395 tickets.

Paul paid costs of £6000. He gave all money left to the charity.

(a) Work out an estimate for the amount of money Paul gave to the charity.

£.....

(3)

(b) Is your answer to (a) an underestimate or an overestimate? Give a reason for your answer.

.....

.....

(1)

(Total for question = 4 marks)

Q2. NON-CALCULATOR

Mel drives a bus 39 weeks in a year.

She drives the bus an average of 298 miles each week.

(a) Work out an estimate for the total number of miles Mel drives the bus in one year.

..... miles

(2)

(b) Is your answer to part (a) an underestimate or an overestimate?
You must give a reason for your answer.

.....

.....

(1)

(Total for question = 3 marks)

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Q3. NON-CALCULATOR

Denise wants to give a pen set to every student in her school. There are 799 students in the school.

Denise already has 102 pen sets. She will need to buy more pen sets. Each pen set costs 89 pence.

(a) Work out an estimate for the total cost of the pen sets Denise needs to buy.

.....

(3)

(b) Is your answer to (a) an underestimate or an overestimate? Give a reason for your answer.

.....

.....

(1)

(Total for question = 4 marks)

Q4. NON-CALCULATOR

A unit of gas costs 4.2 pence. On average Ria uses 50.1 units of gas a week. She pays for the gas she uses in 13 weeks.

(a) Work out an estimate for the amount Ria pays.

.....

(3)

(b) Is your estimate to part (a) an underestimate or an overestimate?
Give a reason for your answer.

.....

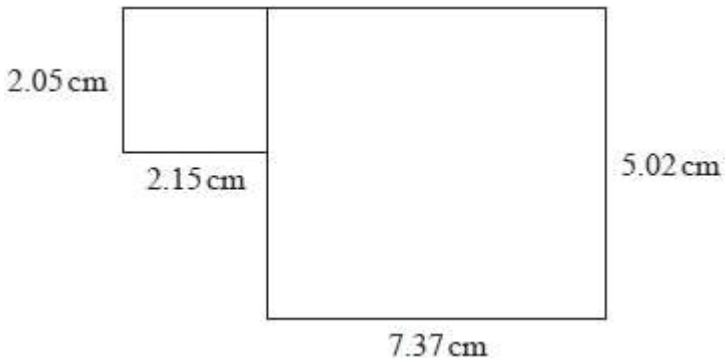
.....

(1)

(Total for question is 4 marks)

Q5. NON-CALCULATOR

This shape is made from two rectangles.



(a) Work out an estimate for the total area of the shape.

..... cm^2

(3)

(b) Is your answer to (a) an overestimate or an underestimate?

Give a reason for your answer.

.....

.....

(1)

(Total for question = 4 marks)

Q6. NON-CALCULATOR

Work out an estimate for $\sqrt{4.98 + 2.16 \times 7.35}$

.....

(Total for question = 3 marks)

Q7. NON-CALCULATOR

Work out an estimate for the value of $\dfrac{43.2 \times \sqrt{99.05}}{0.193}$

.....

(Total for question = 3 marks)

Q8. NON-CALCULATOR

Ami and Josh use a calculator to work out $\frac{595}{4.08^2 + 5.3}$

Ami's answer is 27.1115
Josh's answer is 271.115

One of these answers is correct.

Use approximations to find out which answer is correct.

(Total for question = 3 marks)

Q9. NON-CALCULATOR

A plane travels at a speed of 213 miles per hour.

(a) Work out an estimate for the number of seconds the plane takes to travel 1 mile.

..... seconds

(3)

(b) Is your answer to part (a) an underestimate or an overestimate?
Give a reason for your answer.

.....

.....

(1)

(Total for question = 4 marks)

Q10. NON-CALCULATOR

A cycle race across America is 3069.25 miles in length

Juan knows his average speed for his previous races is 15.12 miles per hour.
For the next race across America he will cycle for 8 hours per day.

(a) Estimate how many days Juan will take to complete the race.

.....

(3)

Juan trains for the race.
The average speed he can cycle at increases. It is now 16.27 miles per hour.

(b) How does this affect your answer to part (a)?

.....

.....

(1)

(Total for question = 4 marks)

Q11. NON-CALCULATOR

Rehan is on holiday in the USA.

He has $200 to spend on clothes.

Rehan buys

1 pair of trainers costing $60
3 T-shirts costing $25 each.

He also wants to buy a jacket costing $80

(a) Has Rehan got enough money to buy the jacket?

You must show how you get your answer.

(3)

The trainers cost $60
The exchange rate is $1 = £0.749

Rehan says "The trainers cost less than £40".

Rehan is wrong.

(b) Using a suitable approximation, show working to explain why.

(2)

(Total for question = 5 marks)

Q12. NON-CALCULATOR

Berenika wants to buy 35 T-shirts.

Each T-shirt costs £5.80
Berenika does the calculation 40 × 6 = 240 to estimate the cost of 35 T-shirts.

(a) Explain how Berenika's calculation shows the actual cost will be less than £240

.....

.....

(1)

There is a special offer.

T-shirts £5.80 each. Buy 30 or more T-shirts. Get 10% off the total cost.

(b) Work out the actual cost of buying 35 T-shirts using the special offer.

£ .....

(4)

(Total for question = 5 marks)

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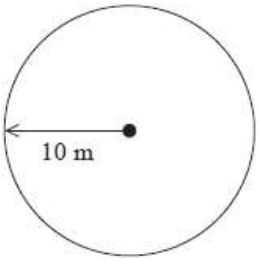
Q13. NON-CALCULATOR

Balena has a garden in the shape of a circle of radius 10 m.
He is going to cover the garden with grass seed to make a lawn.



Grass seed is sold in boxes.
Each box of grass seed will cover 46 m^2 of garden.

Balena wants to cover all the garden with grass seed.

(a) Work out an estimate for the number of boxes of grass seed Balena needs.

You must show your working.

.....

(4)

(b) Is your estimate for part (a) an underestimate or an overestimate? Give a reason for your answer.

.....

.....

.....

.....

(1)

(Total for question = 5 marks)

Q14. NON-CALCULATOR

One uranium atom has a mass of 3.95×10^{-22} grams.

(a) Work out an estimate for the number of uranium atoms in 1kg of uranium.

.....

(3)

(b) Is your answer to (a) an underestimate or an overestimate? Give a reason for your answer.

.....

.....

(1)

(Total for question = 4 marks)

Q15. NON-CALCULATOR

The mass of Jupiter is 1.899×10^{27} kg.
The mass of Saturn is 0.3 times the mass of Jupiter.

(a) Work out an estimate for the mass of Saturn. Give your answer in standard form.

..... kg

(3)

(b) Give evidence to show whether your answer to (a) is an underestimate or an overestimate.

.....

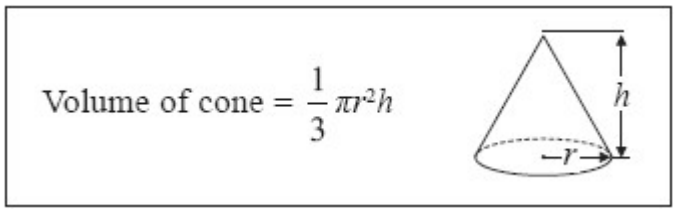
.....

(1)

(Total for question is 4 marks)

Q16. NON-CALCULATOR

A cone has a volume of 98 cm^3. The radius of the cone is 5.13 cm.



(a) Work out an estimate for the height of the cone.

..... cm

(3)

John uses a calculator to work out the height of the cone to 2 decimal places.

(b) Will your estimate be more than John's answer or less than John's answer? Give reasons for your answer.

.....

.....

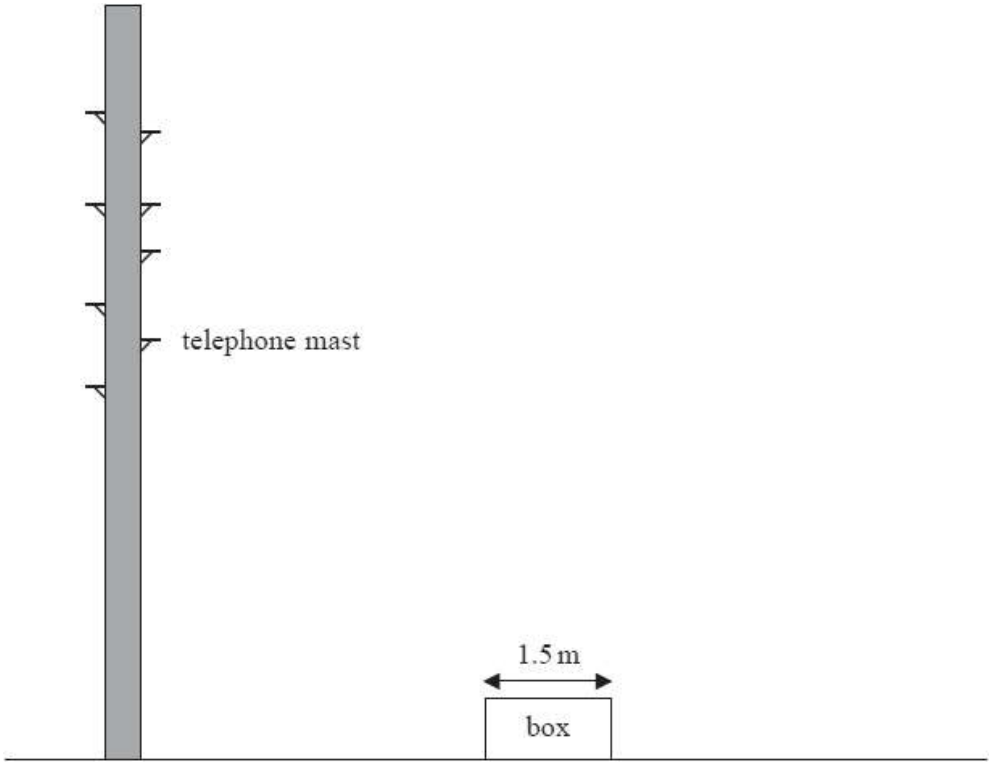
.....

(1)

(Total for question = 4 marks)

Q17. CALCULATOR ALLOWED

The accurate scale diagram shows a telephone mast and a box.



The box has a real width of 1.5 metres.

Find an estimate for the real height, in metres, of the telephone mast.

..... metres

(Total for question = 2 marks)

Q18. CALCULATOR ALLOWED

Jayne writes down the following

$$3.4 \times 5.3 = 180.2$$

Without doing the exact calculation, explain why Jayne's answer cannot be correct.

.....

.....

(Total for question is 1 mark)

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Q19. CALCULATOR ALLOWED

The table shows the costs of sending a parcel by the Express service and by the Rapid service.

Type of service	Cost
Express	£15.25
Rapid	£35.38

Brendan has to send 12 parcels.
It will be cheaper to send the parcels by the Express service than by the Rapid service.

(a) How much cheaper?

£ .....

(3)

Luke wants to send 21 parcels by the Express service.

He does the calculation 20 × £15 = £300 to estimate the cost.

(b) Explain why Luke's calculation shows the actual cost will be more than £300

.....

.....

.....

(1)

(Total for question = 4 marks)

Q20. CALCULATOR ALLOWED

Asif is going on holiday to Turkey.

The exchange rate is £1 = 3.5601 lira.

Asif changes £550 to lira.

(a) Work out how many lira he should get.
Give your answer to the nearest lira.

..... lira

(2)

Asif sees a pair of shoes in Turkey.
The shoes cost 210 lira.

Asif does not have a calculator.
He uses £2 = 7 lira to work out the approximate cost of the shoes in pounds.

(b) Use £2 = 7 lira to show that the approximate cost of the shoes is £60

(2)

(c) Is using £2 = 7 lira instead of using £1 = 3.5601 lira a sensible start to Asif's method to work out the cost of the shoes in pounds?

You must give a reason for your answer.

.....

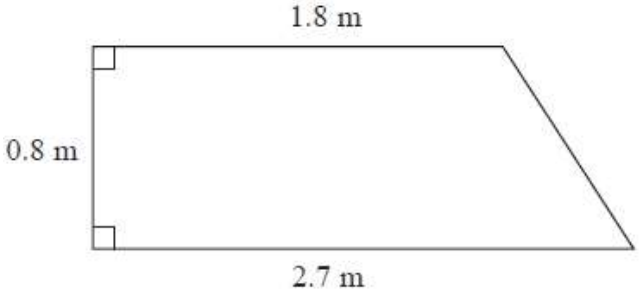
.....

(1)

(Total for question = 5 marks)

Q21. CALCULATOR ALLOWED

The diagram shows part of a wall in the shape of a trapezium.



Karen is going to cover this part of the wall with tiles.
Each rectangular tile is 15 cm by 7.5 cm

Tiles are sold in packs. There are 9 tiles in each pack.

Karen divides the area of the wall by the area of a tile to work out an estimate for the number of tiles she needs to buy.

(a) Use Karen's method to work out an estimate for the number of packs of tiles she needs to buy.

.....

(5)

Karen is advised to buy 10% more tiles than she estimated.
Buying 10% more tiles will affect the number of the tiles Karen needs to buy.

She assumes she will need to buy 10% more packs of tiles.

(b) Is Karen's assumption correct?
You must show your working.

(2)

(Total for question is 7 marks)

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