

Questions

Q1.

Write 478 to the nearest hundred.

.....
(Total for question = 1 mark)

(Q01 1MA1/3F, June 2019)

Q2.

(a) Work out an estimate for the value of $\sqrt{63.5 \times 101.7}$

.....
(2)

$(2.3)^6 = 148$ correct to 3 significant figures.

(b) Find the value of $(0.23)^6$ correct to 3 significant figures.

.....
(1)

(c) Find the value of 5^{-2}

.....
(1)

(Total for question = 4 marks)

(Q08 1MA1/1H, June 2019)

Q3.

Work out

$$\sqrt{\frac{2.5 \times \sin 43^\circ}{8.2^2 - 50.5}}$$

Give your answer correct to 3 significant figures.

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

(Q07 1MA1/3H, June 2019)

Q4.

Write 1476 to the nearest 10

.....
(Total for question = 1 mark)

(Q01 1MA1/2F, June 2022)

Q5.

Use your calculator to work out

$$\frac{\sqrt[3]{1.57^4 + \tan 60^\circ}}{7.2^{\frac{1}{2}}}$$

Give your answer correct to 3 significant figures.

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

(Q08 1MA1/2H, June 2022)

Q6.

(a) Write 2530 correct to 2 significant figures.

.....
(1)

(b) Write 0.0874 correct to 1 significant figure.

.....
(1)

(Total for question = 2 marks)

(Q18 1MA1/3F, June 2022)

Q7.

Write 7829 to the nearest 1000

.....
(Total for question = 1 mark)

(Q04 1MA1/1F, Nov 2018)

Q8.

(a) Write 7357 correct to 3 significant figures.

.....
(1)

(b) Work out $\frac{\sqrt{17 + 4^2}}{7.3^2}$

Write down all the figures on your calculator display.

.....
(2)

(Total for question = 3 marks)

(Q01 1MA1/3H, Nov 2018)

Q9.

Write 4.666 correct to the nearest whole number.

.....

(Total for question = 1 mark)

(Q03 1MA1/1F, Nov 2020)

Q10.

$$\frac{790 \times 289}{49}$$

Work out an estimate for

$$49$$

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.....

(Total for question = 3 marks)

(Q18 1MA1/1F, Nov 2020)

Q11.

Write 29 381 correct to the nearest 1000

.....
(Total for question = 1 mark)

(Q02 1MA1/2F, Nov 2020)

Q12.

A person's heart beats approximately 10^5 times each day.
A person lives for approximately 81 years.

- (a) Work out an estimate for the number of times a person's heart beats in their lifetime.
Give your answer in standard form correct to 2 significant figures.

.....
(2)

2×10^{12} red blood cells have a total mass of 90 grams.

- (b) Work out the average mass of 1 red blood cell.
Give your answer in standard form.

..... grams
(2)

(Total for question = 4 marks)

(Q10 1MA1/3H, Nov 2020)

Q13.

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)

(Q24 1MA1/1F, Nov 2018)

Q14.

(a) Work out $\sqrt{\frac{13.82}{4.06}}$

Write down all the figures on your calculator display.

.....

(2)

(b) Give your answer to part (a) correct to 2 decimal places.

.....

(1)

(Total for question = 3 marks)

(Q12 1MA1/2F, Nov 2021)

Q15.

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)

(Q11 1MA1/1H/N, Specimen papers)

Q16.

The distance from the Earth to the Sun is 1.496×10^{11} metres.
The speed of light is 3×10^8 metres per second.

(a) Show that, correct to 3 significant figures, light will take 0.139 hours to travel from the Sun to the Earth.

1 googol is 1×10^{100}

Danesh says,

" When I multiply 1.496×10^{11} by 6.68×10^9 I get nearly 1 googol because $1.496 \times 10^{11} \times 6.68 \times 10^9 = 9.99 \times 10^{99}$ "

(b) Is Danesh correct?

Give a reason for your answer.

.....
.....

(3)

(1)

(Total for question = 4 marks)

(Q28 1MA1/2F/M2, Specimen papers)

Q17.

Write 19.4949 correct to the nearest whole number.

.....
(Total for question = 1 mark)

(Q04 1MA1/3F, Nov 2022)

Q18.

$$\frac{9.8 + 6.8}{4.2 \times 2.1}$$

(a) Work out 4.2×2.1

Give your answer as a decimal.

Write down all the figures on your calculator display.

.....
(2)

(b) Write your answer to part (a) correct to 2 decimal places.

.....
(1)

(Total for question = 3 marks)

(Q18 1MA1/2F, Nov 2023)

Q19.

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.

.....
.....

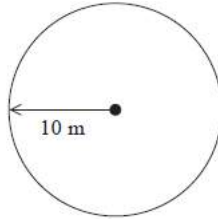
(1)

(Total for question = 4 marks)

(Q13 1MA1/1F/N, Specimen papers)

Q20.

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)

Q21.

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?

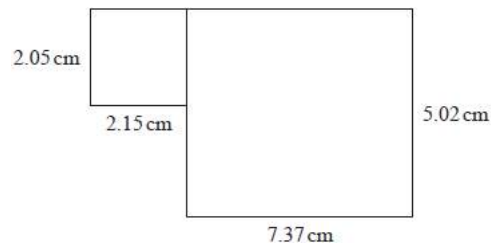
Give a reason for your answer.

.....
.....
(1)

(Total for question = 4 marks)

Q22.

This shape is made from two rectangles.



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

..... cm²
(3)

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

Give a reason for your answer.

.....
.....

(1)

(Total for question = 4 marks)

Q23.

Work out an estimate for $\frac{31 \times 9.87}{0.509}$

(Total for Question is 3 marks)

(Q04 1MA0/1H, Nov 2012)

Q24.

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

(Total for question = 3 marks)

(Q08 1MA1/1H/S2, Specimen papers)

Q25.

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)

(Q08 1MA1/1H/S1, Specimen papers)

Q26.

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.

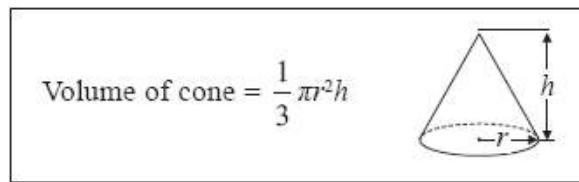
.....
.....
(1)

(Total for question is 4 marks)

(Q14 1MA1/1F/S1, Specimen papers)

Q27.

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)

Q28.

There are 892 litres of oil in Mr Aston's oil tank.
He uses 18.7 litres of oil each day.

Estimate the number of days it will take him to use all the oil in the tank.

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

(Q05 1MA0/1H, June 2016)

Q29.

$$\frac{89.3 \times 0.51}{4.8}$$

Work out an estimate for the value of

$$4.8$$

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.....
(Total for Question is 2 marks)

(Q07 5MB2H/01, Nov 2013)

Q30.

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)

Q31.

$$\frac{43.2 \times \sqrt{99.05}}{0.193}$$

Work out an estimate for the value of

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

(Q07 1MA1/1H/M1, Specimen papers)

Q32.

Sanders has a water tank for storing rainwater.

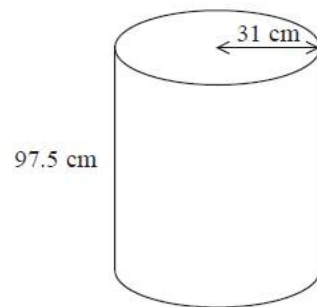


Diagram **NOT** accurately drawn

The tank is in the shape of a cylinder.
The radius of the cylinder is 31 cm.
The height of the cylinder is 97.5 cm.

The tank is full of water.

Work out an estimate for the volume of water in the tank.
Give your answer in litres.
You must show your working.

Use $1000 \text{ cm}^3 = 1 \text{ litre}$.

..... litres

(Total for question = 3 marks)

(Q12 1MA0/1H, June 2017)

Q33.

$$\frac{5.7 \times 8.2}{0.26}$$

Work out an estimate for

.....

(Total for question = 3 marks)

(Q26 1MA1/1F, Nov 2023)

Q34.

Sophie drives a distance of 513 kilometres on a motorway in France.

She pays 0.81 euros for every 10 kilometres she drives.

(a) Work out an estimate for the total amount that Sophie pays.

..... euros

(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)

(Q24 1MA1/1F, June 2024)

Q35.

A car travelled 4.96 miles at an average speed of 30.4 miles per hour.

(a) Work out an estimate for the time taken by the car.

Give your answer in minutes.

..... minutes

(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)

Q36.

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)

(Q12 1MA1/1F/M3, Specimen papers)

Q37.

(a) Use your calculator to work out $\frac{29^2 - 4.6}{\sqrt{35 - 1.9^3}}$

Write down all the figures on your calculator display.

.....
(2)

(b) Write your answer to part (a) correct to 4 significant figures.

.....
(1)

(Total for question = 3 marks)

(Q02 1MA1/3H, Nov 2019)

Q38.

A total of 700 tickets were on sale for a football match.

452 of the tickets were sold.

(a) How many tickets were **not** sold?

.....
(2)

For a different football match,

297 tickets were sold for £9.50 each.

399 tickets were sold for £19.50 each.

(b) Work out an estimate for the total amount of money paid for these tickets.

You must show all your working.

£.....
(3)

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

Give a reason for your answer.

.....
.....
.....

(1)

(Total for question = 6 marks)

Q39.

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 $20 \times £15 = £300$ 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)

Q40.

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 1MA1/1F, Nov 2019)

Q41.

$$\frac{\sqrt{35.2 + 1.7^3}}{4.6^2 - 8.91}$$

(a) Work out the value of

Write down all the numbers on your calculator display.

(b) Write your answer to part (a) correct to 2 significant figures.

.....
(2)

.....
(1)

(Total for question = 3 marks)

(Q19 1MA1/2F, June 2024)

Q42.

Berenika wants to buy 35 T-shirts.

Each T-shirt costs £5.80

Berenika does the calculation $40 \times 6 = 240$ 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)

Q43.

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)

(Q08 1MA1/3F/S1, Specimen papers)

Q44.

(a) Work out an estimate for the value of 92×1.63

You must show all your working.

.....
(2)

Given that

$$2.96 \times 3.2 = 9.472$$

(b) find the value of 29.6×32

.....
(1)

(Total for question = 3 marks)

(Q15 1MA1/1F, June 2022)

Q45.

Write 327 correct to the nearest ten.

.....

(Total for question = 1 mark)

(Q04 1MA1/1F, Nov 2021)

Q46.

$$\frac{4.36 + 2.8^3}{6.8 - 5.42}$$

(a) Work out

Give your answer as a decimal.

Write down all the digits on your calculator display.

.....

(2)

(b) Give your answer to part (a) correct to 1 decimal place.

.....

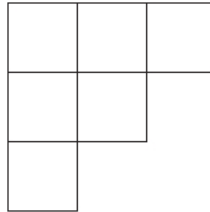
(1)

(Total for question = 3 marks)

(Q15 1MA1/3F/M3, Specimen papers)

Q47.

The diagram shows a shape made from 6 identical squares.



The total area of the shape is 5406 cm^2

- (a) Find an estimate for the length of one side of each square.
Give your answer correct to the nearest whole number.

..... cm

(3)

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

.....
.....
.....

(1)

(Total for question = 4 marks)

Q48.

Write 56.78 correct to one significant figure.

.....

(Total for question = 1 mark)

(Q02 1MA1/2F, June 2017)

Q49.

Write 41 675 correct to the nearest 1000

.....

(Total for question = 1 mark)

(Q01 1MA1/3F/M1, Specimen papers)

Q50.

Write 3758 correct to the nearest 1000

.....

(Total for question = 1 mark)

(Q01 1MA1/3F, Nov 2017)

Q51.

Write 6819 to the nearest 1000

.....

(Total for question = 1 mark)

(Q01 1MA1/2F/S2, Specimen papers)

Q52.

Write 5.5454 correct to 2 decimal places.

.....

(Total for question = 1 mark)

(Q03 1MA1/1F/M2, Specimen papers)

Q53.

Write 4.4354 correct to 2 decimal places.

.....

(Total for question is 1 mark)

(Q03 1MA1/1F/S1, Specimen papers)

Q54.

Write 7.264 51 correct to 3 decimal places.

.....

(Total for question = 1 mark)

(Q02 1MA1/1F, June 2017)

Q55.

Write 2148 correct to the nearest 100

.....

(Total for question = 1 mark)

(Q01 1MA1/3F/N, Specimen papers)

Q56.

Write the number 5689 correct to the nearest thousand.

.....

(Total for question is 1 mark)

(Q01 1MA1/3F/S1, Specimen papers)

Q57.

Write the number 2538 correct to the nearest hundred.

.....

(Total for question = 1 mark)

(Q03 1MA1/3F, June 2018)

Q58.

Write 6324 correct to the nearest thousand.

.....

(Total for question = 1 mark)

(Q01 1MA1/1F, June 2018)

Q59.

Write 2549 correct to the nearest 10

.....

(Total for question = 1 mark)

(Q04 1MA1/1F/M3, Specimen papers)

Q60.

Write 4.58 correct to 1 decimal place.

.....

(Total for question = 1 mark)

(Q02 1MA1/1F, Nov 2019)

Q61.

Write the number 8375 correct to the nearest thousand.

.....

(Total for question = 1 mark)

(Q02 1MA1/2F, Nov 2019)

Q62.

Write 8061 correct to the nearest hundred.

.....

(Total for question = 1 mark)

(Q02 1MA1/3F, Nov 2023)

Q63.

Write the number 18 475 correct to the nearest thousand.

.....

(Total for question = 1 mark)

(Q01 1MA1/1F, June 2024)

Q64.

$$\frac{29^2 - 4.6}{\sqrt{35 - 1.9^3}}$$

(a) Use your calculator to work out

Write down all the figures on your calculator display.

.....

(2)

(b) Write your answer to part (a) correct to 4 significant figures.

.....

(1)

(Total for question = 3 marks)

(Q23 1MA1/3F, Nov 2019)

Q65.

(a) Write 87 569 correct to 3 significant figures.

(b) Work out $\frac{(3.2 + 3.7) \times 4.9}{5.3 - 2.8}$
Give your answer as a decimal.

.....
(1)

.....
(2)

(Total for question = 3 marks)

(Q17 1MA1/3F, Nov 2022)

Q66.

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)

(Q20 1MA1/1F, Nov 2017)

Q67.

(a) Use your calculator to work out $\frac{43.2 + \sqrt{99.05}}{0.193}$

Write down all the digits on your calculator display.

.....
(2)

(b) Write your answer to part (a) correct to 2 significant figures.

.....
(1)

(Total for question = 3 marks)

(Q17 1MA1/2F/M2, Specimen papers)

Q68.

Work out the value of $\frac{\sqrt{2.7 + 6.5}}{4.8 - 1.06}$

Give your answer correct to 2 decimal places.

.....

(Total for question = 3 marks)

(Q12 1MA1/2F/M1, Specimen papers)

Q69.

Use your calculator to work out $\sqrt{\frac{\sin 25^\circ + \sin 40^\circ}{\cos 25^\circ - \cos 40^\circ}}$

(a) Write down all the figures on your calculator display.

.....

(2)

(b) Write your answer to part (a) correct to 2 decimal places.

.....

(1)

(Total for question = 3 marks)

(Q23 1MA1/2F, Nov 2017)

Q70.

Write 1.59 correct to 1 decimal place.

.....

(Total for question = 1 mark)

(Q02 1MA1/2F, June 2018)