Chhetri Academy

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GCSE MATHS

Number

Edexcel 1MA1 | Subtopic collection Topic 08

Rounding, estimation and error intervals

Foundation tier

Past paper question booklet

81	2010-2025	Foundation
question groups	available papers	tier

Before you begin

1. Show working and use units where appropriate.
2. Use extra paper if you need more space.
3. Print at actual size (100%) for measurement questions.

Name _____ **Date** _____

Whole questions are retained for context; some parts cover other points. Legacy sources are labelled.

1 (a) Write the number **three thousand one hundred and nine** in figures.

.....

(1)

(b) Write down the value of the 6 in the number 23.469

.....

(1)

(c) Write the number 4261 correct to the nearest hundred.

.....

(1)

(Total for Question 1 is 3 marks)

4 (a) Write down the square of 8

.....

(1)

(b) Write down the value of 10^3

.....

(1)

(c) Estimate the value of $\sqrt{20}$

.....

(1)

(Total for Question 4 is 3 marks)

2 (a) Write down the number **five hundred and seven** in figures.

.....

(1)

(b) Write down the value of the **4** in the number 9346

.....

(1)

(c) Write 6431 to the nearest thousand.

.....

(1)

(Total for Question 2 is 3 marks)

3 (a) Work out 50% of 86

.....

(1)

(b) Work out $3 + 5 \times 2$

.....

(1)

(c) Write down an estimate for $\sqrt{60}$

.....

(1)

(Total for Question 3 is 3 marks)

4 (a) Write 5643 to the nearest hundred.

.....

(1)

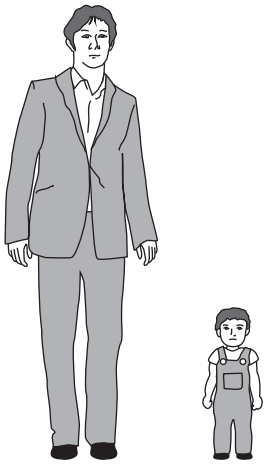
(b) Write 197 768 to the nearest thousand.

.....

(1)

(Total for Question 4 is 2 marks)

11 The picture shows a child and a man.



The man is of normal height.
The child and the man are drawn to the same scale.

(a) Write down, in metres, an estimate for the real height of the man.

..... m

(1)

(b) Work out, in centimetres, an estimate for the real height of the child.

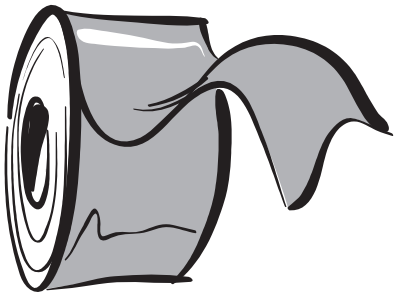
..... cm

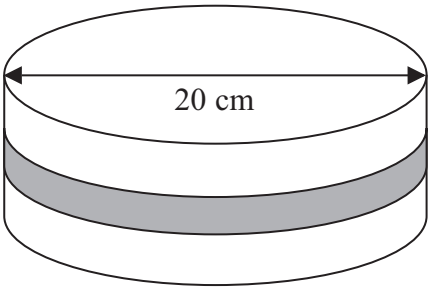
(3)

(Total for Question 11 is 4 marks)

19 Susan has a round cake.
The cake has a diameter of 20 cm.

Diagram **NOT** accurately drawn





Susan wants to put a ribbon round the cake.
What is the least length of ribbon she can use?

.....

(Total for Question 19 is 3 marks)

21

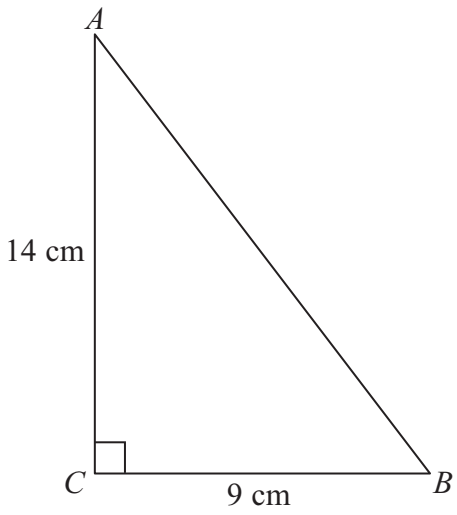


Diagram **NOT** accurately drawn

Calculate the length of AB.
Give your answer correct to 1 decimal place.

..... cm

(Total for Question 21 is 3 marks)

1 (a) Write the number **seven thousand and twenty five** in figures.

.....

(1)

(b) Write the number 9450 in words.

.....

(1)

(c) Write the number 28.75 to the nearest whole number.

.....

(1)

(d) Write the number 7380 to the nearest thousand.

.....

(1)

(Total for Question 1 is 4 marks)

17 (a) (i) Work out $3.2^2 + \sqrt{7.5}$

Write down all the figures from your calculator display.

.....

(ii) Write your answer to (a)(i) correct to 2 significant figures.

.....

(2)

(b) Work out the value of 10^5

.....

(1)

(Total for Question 17 is 3 marks)

17 A ticket for a seat at a school play costs £2.95

There are 21 rows of seats.
There are 39 seats in each row.

The school will sell all the tickets.

Work out an estimate for the total money the school will get.

£.....

(Total for Question 17 is 3 marks)

Question 12

1 (a) Write the number **two thousand and eighty five** in figures.

.....

(1)

(b) Write the number 5108 in words.

.....

(1)

(c) Write down the value of **9** in the number 2.96

.....

(1)

(d) Write down 157 correct to the nearest 10

.....

(1)

(Total for Question 1 is 4 marks)

Question 13

1 (a) Write the number 3460 in words.

.....

(1)

(b) Write the number 258 correct to the nearest hundred.

.....

(1)

(c) Write these numbers in order of size.
Start with the smallest number.

6.37 6.5 6.48 6.04 6.59

.....

(1)

(Total for Question 1 is 3 marks)

1 (a) Write the number **three thousand five hundred and two** in figures.

.....

(1)

(b) Write the number 2019 in words.

.....

(1)

(c) Write down the value of the **7** in the number 4571

.....

(1)

(d) Write 6718 correct to the nearest hundred.

.....

(1)

(Total for Question 1 is 4 marks)

11 (a) Write $\frac{2}{5}$ as a percentage.

.....%

(1)

(b) Work out an estimate for 113×185

.....

(2)

(Total for Question 11 is 3 marks)

22 The diagram shows a trundle wheel.

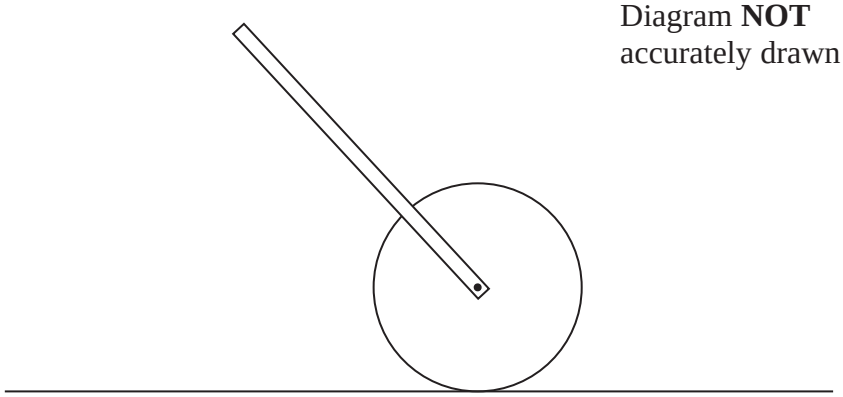


Diagram **NOT** accurately drawn

Trundle wheels are used to measure distances along the ground.

The radius of the trundle wheel is 20 cm.

Jim wants to work out the distance between two junctions on a road.
He rolls the trundle wheel between the two junctions.

The trundle wheel rotates exactly 34 times.

Work out the distance between the two junctions.
Give your answer in metres correct to the nearest metre.

.....m

(Total for Question 22 is 3 marks)

1 The table shows the heights of six mountains.

Mountain	Height (metres)
Diran	7266
Lhotse	8516
K12	7428
Cho Oyu	8188
Jannu	7711
Makalu	8485

(a) Write down the name of the highest of these mountains.

.....

(1)

(b) Write the number **8188** to the nearest hundred.

.....

(1)

(c) Write the number **7428** in words.

.....

(1)

The mountain K3 is eight thousand and fifty one metres high.

(d) Write the number **eight thousand and fifty one** in figures.

.....

(1)

(Total for Question 1 is 4 marks)

3 (a) Write $\frac{7}{10}$ as a decimal.

.....

(1)

(b) Write 0.45 as a percentage.

.....%

(1)

(c) Write 30% as a fraction.
Give your fraction in its simplest form.

.....

(2)

(d) Write the number 2.738 correct to 2 decimal places.

.....

(1)

(Total for Question 3 is 5 marks)

4 The table gives some information about four cars.

Car	Price (£)	Length (mm)	Top speed (mph)	Engine size (cc)
Ficus	19 195	2650	120	999
Hind	18 995	2650	116	1582
Avris	20 535	2600	110	1798
Gulf	19 120	2580	121	1390

(a) Which of the four cars has the least length?

.....

(1)

(b) Which car has a price greater than £19 000 **and** a top speed of less than 120 mph?

.....

(1)

The price of the Ficus is £19 195

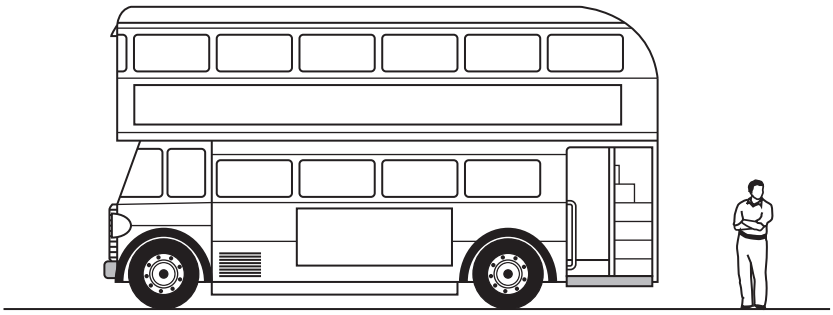
(c) Write 19 195 correct to the nearest 100

.....

(1)

(Total for Question 4 is 3 marks)

17



The picture shows a bus driver standing next to his bus.
The bus driver and the bus are drawn to the same scale.

Work out an estimate for the height of the bus.
You must clearly show how you get your answer.

.....

(Total for Question 17 is 3 marks)

1 (a) Write the number 4726 in words.

.....

(1)

(b) Write the number **five million** in figures.

.....

(1)

(c) Write the number 3648 correct to the nearest hundred.

.....

(1)

(d) Write these numbers in order of size.
Start with the smallest number.

7.47 7.6 7.04 7.58 7.69

.....

(1)

(Total for Question 1 is 4 marks)

1 (a) Write the number **six thousand and thirty seven** in figures.

.....

(1)

(b) Write the number 8377 correct to the nearest ten.

.....

(1)

(c) Write these numbers in order of size.
Start with the smallest number.

43 37 19 26 21

.....

(1)

(Total for Question 1 is 3 marks)

13 (a) Write 7300 correct to one significant figure.

.....

(1)

(b) Write 5.69 correct to one significant figure.

.....

(1)

(Total for Question 13 is 2 marks)

2 The diagram shows the distances between 4 villages *C*, *H*, *S* and *Y* on a postman's round.

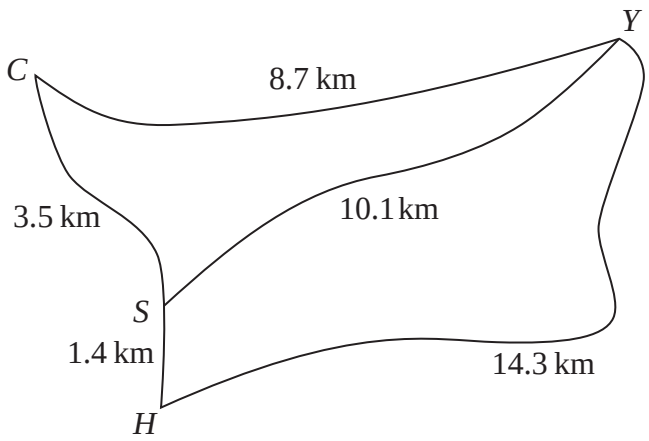


Diagram **NOT** accurately drawn

Gordon delivers letters to these 4 villages.

He starts and finishes at *C*.

Gordon wants to drive the shortest distance to deliver all his letters.

(i) Work out this shortest distance.
You must show all your working.

..... km

(ii) Write down Gordon's route.

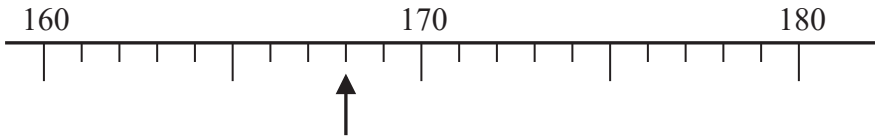
.....

(Total for Question 2 is 4 marks)

1 (a) Write the number 6458 correct to the nearest hundred.

.....

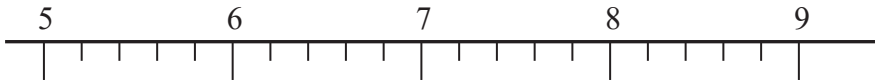
(1)



(b) Write down the number marked by the arrow.

.....

(1)



(c) Find the number 7.2 on the number line above.
Mark the number with an arrow (↑).

(1)

(Total for Question 1 is 3 marks)

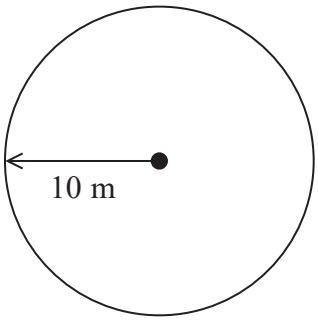
Question 26

2 Write 7.264 51 correct to 3 decimal places.

.....

(Total for Question 2 is 1 mark)

18 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 18 is 5 marks)

Question 28

2 Write 56.78 correct to one significant figure.

.....

(Total for Question 2 is 1 mark)

Question 29

June 2017 | 1MA1/2F | Original Q23

23 A number, n, is rounded to 2 decimal places.
The result is 4.76

Using inequalities, write down the error interval for n.

.....

(Total for Question 23 is 2 marks)

16 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.

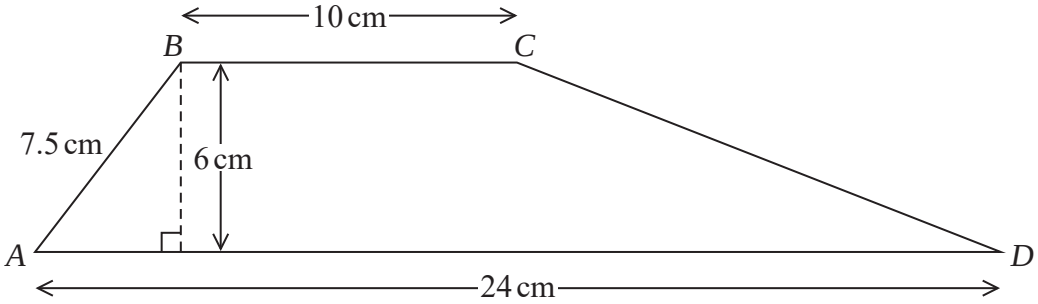
(b) Work out the actual cost of buying 35 T-shirts using the special offer.

£.....

(4)

(Total for Question 16 is 5 marks)

22 *ABCD* is a trapezium.



Work out the size of angle *CDA*.
Give your answer correct to 1 decimal place.

.....°

(Total for Question 22 is 5 marks)

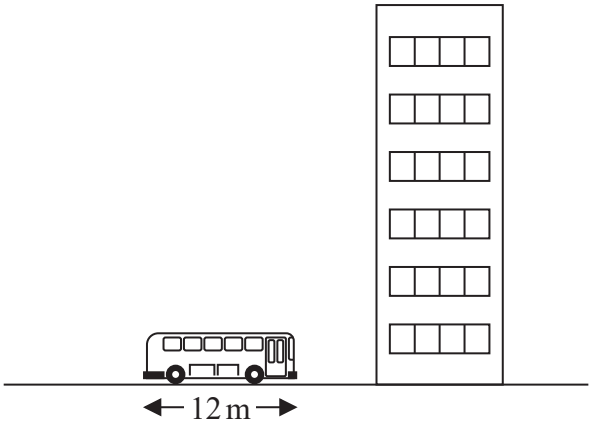
Question 32

1 Write 3758 correct to the nearest 1000

.....

(Total for Question 1 is 1 mark)

8



The picture shows a bus next to a building.
The bus has a length of 12 m.

The bus and the building are drawn to the same scale.

Work out an estimate for the height, in metres, of the building.

..... m

(Total for Question 8 is 2 marks)

23 (a) Find the value of the reciprocal of 1.6
Give your answer as a decimal.

.....

(1)

Jess rounds a number, x, to one decimal place.
The result is 9.8

(b) Write down the error interval for x.

.....

(2)

(Total for Question 23 is 3 marks)

Question 35

1 Write 6324 correct to the nearest thousand.

.....

(Total for Question 1 is 1 mark)

Question 36

June 2018 | 1MA1/2F | Original Q2

2 Write 1.59 correct to 1 decimal place.

.....

(Total for Question 2 is 1 mark)

Question 37

3 Write the number 2538 correct to the nearest hundred.

.....

(Total for Question 3 is 1 mark)

Question 38

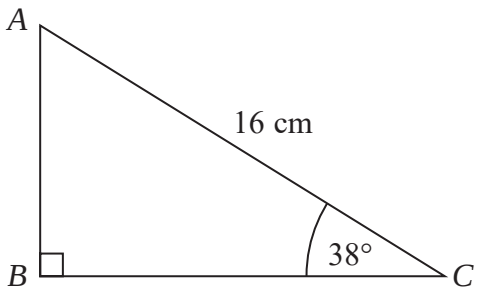
November 2018 | 1MA1/1F | Original Q4

4 Write 7829 to the nearest 1000

.....

(Total for Question 4 is 1 mark)

24 *ABC* is a right-angled triangle.



Calculate the length of *AB*.
Give your answer correct to 2 decimal places.

.....cm

(Total for Question 24 is 2 marks)

Question 40

June 2019 | 1MA1/2F | Original Q25

25 Sally used her calculator to work out the value of a number y.

The answer on her calculator display began

8.3

Complete the error interval for y.

..... $\leqslant y <$ .....

(Total for Question 25 is 2 marks)

Question 41

1 Write 478 to the nearest hundred.

.....

(Total for Question 1 is 1 mark)

11 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

.....

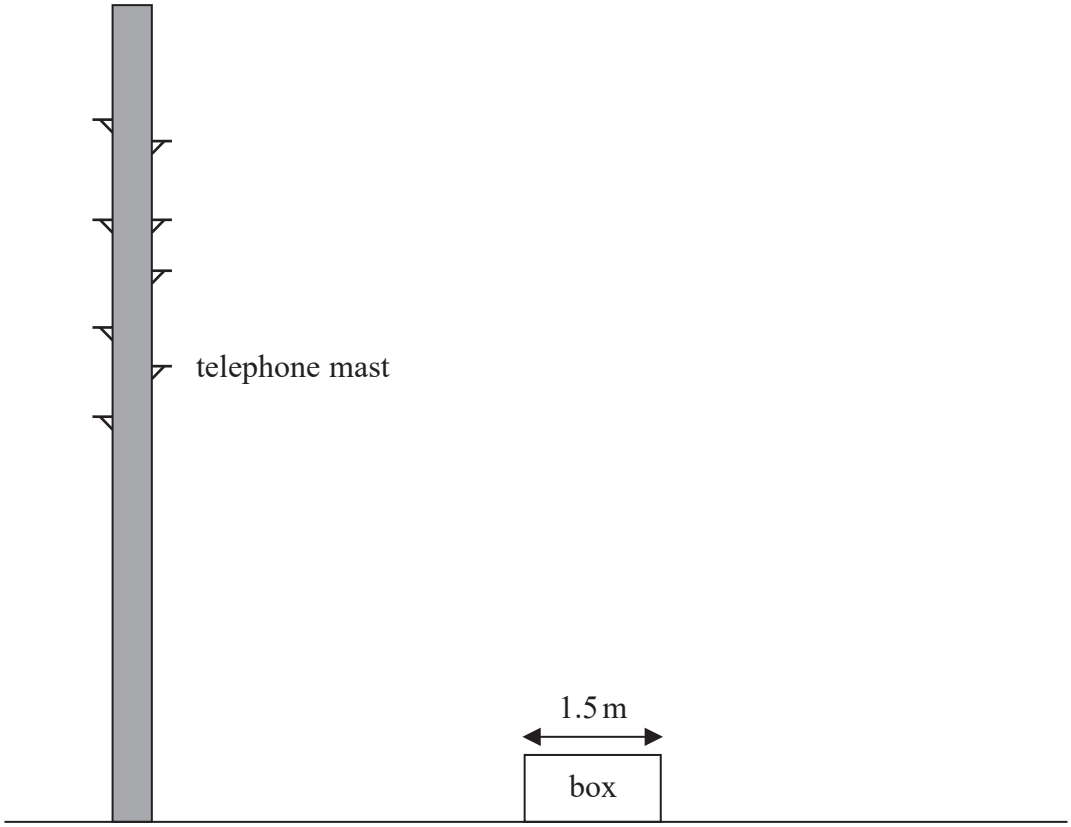
.....

.....

(1)

(Total for Question 11 is 4 marks)

17 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 17 is 2 marks)

Question 44

November 2019 | 1MA1/1F | Original Q2

2 Write 4.58 correct to 1 decimal place.

.....

(Total for Question 2 is 1 mark)

Question 45

2 Write the number 8375 correct to the nearest thousand.

.....

(Total for Question 2 is 1 mark)

Question 46

November 2019 | 1MA1/2F | Original Q22

22 The length of a pencil is 128 mm correct to the nearest millimetre.

Complete the error interval for the length of the pencil.

..... mm $\leqslant$ length $<$ ..... mm

(Total for Question 22 is 2 marks)

3 Write 4.666 correct to the nearest whole number.

.....

(Total for Question 3 is 1 mark)

18 Work out an estimate for $\dfrac{790 \times 289}{49}$

.....

(Total for Question 18 is 3 marks)

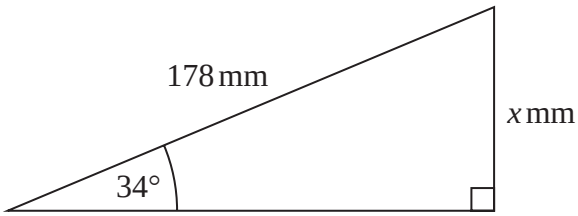
Question 49

2 Write 29 381 correct to the nearest 1000

.....

(Total for Question 2 is 1 mark)

25



Work out the value of x.
Give your answer correct to 1 decimal place.

.....

(Total for Question 25 is 2 marks)

19 Here are the types of sandwiches sold in a cafe last week.

Sandwiches
Tuna
Cheese
Chicken
Egg

56 tuna sandwiches were sold.
This was 40% of the total number of sandwiches sold.

(a) Work out the total number of sandwiches sold.

.....

(2)

Of the 56 tuna sandwiches sold, 18 were sold on Friday.

(b) Write 18 as a percentage of 56
Give your answer correct to the nearest whole number.

..... %

(2)

(Total for Question 19 is 4 marks)

25 A number, m, is rounded to 1 decimal place.
The result is 9.4

Complete the error interval for m.

..... $\leqslant m <$ .....

(Total for Question 25 is 2 marks)

Question 53

4 Write 327 correct to the nearest ten.

.....

(Total for Question 4 is 1 mark)

Question 54

November 2021 | 1MA1/1F | Original Q27

27 Freddie measured the length of a pencil as 7.2 cm correct to 1 decimal place.

Complete the error interval for the length, p cm, of the pencil.

..... $\leqslant p <$ .....

(Total for Question 27 is 2 marks)

12 (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 12 is 3 marks)

24 A water tank is empty.
Anil needs to fill the tank with 2400 litres of water.

Company **A** supplies water at a rate of 8 litres in 1 minute 40 seconds.
Company **B** supplies water at a rate of 2.2 gallons per minute.

1 gallon = 4.54 litres

Company **A** would take more time to fill the tank than Company **B** would take to fill the tank.

How much more time?
Give your answer in minutes correct to the nearest minute.

..... minutes

(Total for Question 24 is 4 marks)

15 (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 15 is 3 marks)

Question 58

1 Write 1476 to the nearest 10

.....

(Total for Question 1 is 1 mark)

Question 59

23 The length of a football pitch is 90 metres, correct to the nearest metre.

Complete the error interval for the length of the football pitch.

..... m $\leqslant$ length $<$ ..... m

(Total for Question 23 is 2 marks)

24 Festival A will be in a rectangular field with an area of 80 000 m^2
The greatest number of people allowed to attend Festival A is 425

Festival B will be in a rectangular field 700 m by 2000 m.
The greatest number of people allowed to attend Festival B is 6750

The area per person allowed for Festival B is greater than the area per person allowed for Festival A.

(a) How much greater?
Give your answer correct to the nearest whole number.

..... m^2
(4)

Callum says,

"300 cm^2 is the same as 3 m^2 because there are 100 cm in 1 m so you divide by 100"

Callum's method is wrong.

(b) Explain why.

.....

.....

.....

(1)

(Total for Question 24 is 5 marks)

Question 61

June 2022 | 1MA1/3F | Original Q18

18 (a) Write 2530 correct to 2 significant figures.

.....

(1)

(b) Write 0.0874 correct to 1 significant figure.

.....

(1)

(Total for Question 18 is 2 marks)

25 (a) Find the value of the reciprocal of 0.8

.....

(1)

$x = 4700$ correct to 2 significant figures.

(b) Complete the error interval for x.

..... $\leqslant x <$ .....

(2)

(Total for Question 25 is 3 marks)

Question 63

4 Write 19.4949 correct to the nearest whole number.

.....

(Total for Question 4 is 1 mark)

11 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 11 is 6 marks)

Question 65

1 Write 6184 correct to the nearest hundred.

.....

(Total for Question 1 is 1 mark)

18 Asha buys 180 cans of cola.

The cans are sold in packs.
There are 12 cans in each pack.
Each pack costs £3

(a) Work out the total cost of the cola Asha buys.

£.....

(3)

Ethan buys a box of 24 cans of lemonade for £7
There are 330 m*l* of lemonade in each can.

(b) Work out the cost of 100 m*l* of lemonade.
Give your answer correct to the nearest penny.

.....p

(3)

(Total for Question 18 is 6 marks)

26 A number, d, is rounded to 1 decimal place.
The result is 12.7

Complete the error interval for d.

..... $\leqslant d <$ .....

(Total for Question 26 is 2 marks)

14 120 boxes cost £6
270 bags cost £10

A bag is cheaper than a box.

How much cheaper?
Give your answer in pence correct to 1 decimal place.

.....p

(Total for Question 14 is 4 marks)

21 Jonny wants to know how much coffee he will need for 800 people at a meeting.

Each person who drinks coffee will drink 2 cups of coffee.
10.6 g of coffee is needed for each cup of coffee.

Jonny assumes 68% of the people will drink coffee.

(a) Using this assumption, work out the amount of coffee Jonny needs.
Give your answer correct to the nearest gram.

..... g
(4)

Jonny's assumption is wrong.
72% of the people will drink coffee.

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

.....

.....

.....

(1)

(Total for Question 21 is 5 marks)

25 Lava flows from a volcano at a constant rate of $11.9\,m^3/s$

How many days does it take for $67\,205\,600\,m^3$ of lava to flow from the volcano?
Give your answer correct to the nearest day.

..... days

(Total for Question 25 is 3 marks)

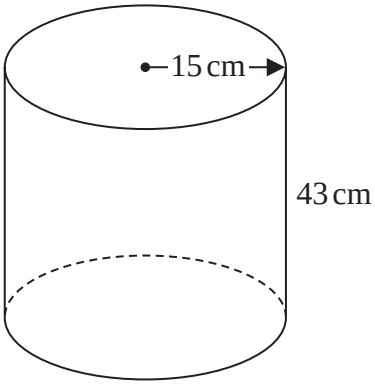
Question 71

26 Work out an estimate for $\dfrac{5.7 \times 8.2}{0.26}$

.....

(Total for Question 26 is 3 marks)

28 The diagram shows an empty tank in the shape of a cylinder.



The cylinder has radius 15 cm and height 43 cm.

Water flows into the tank at a rate of 0.47 litres per minute.

Calculate the number of minutes it will take to completely fill the tank.
Give your answer correct to the nearest minute.

..... minutes

(Total for Question 28 is 4 marks)

2 Write 8061 correct to the nearest hundred.

.....

(Total for Question 2 is 1 mark)

Question 74

1 Write the number 18 475 correct to the nearest thousand.

.....

(Total for Question 1 is 1 mark)

24 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.

.....

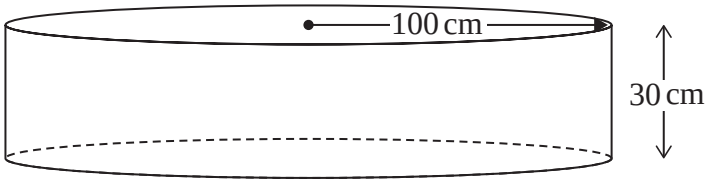
.....

.....

(1)

(Total for Question 24 is 4 marks)

28 A paddling pool is in the shape of a cylinder.



The pool has radius 100 cm.
The pool has depth 30 cm.

The pool is empty.
It is then filled with water at a rate of 250 cm^3 per second.

Work out the number of minutes it takes to fill the pool completely.
Give your answer correct to the nearest minute.
You must show all your working.

..... minutes

(Total for Question 28 is 4 marks)

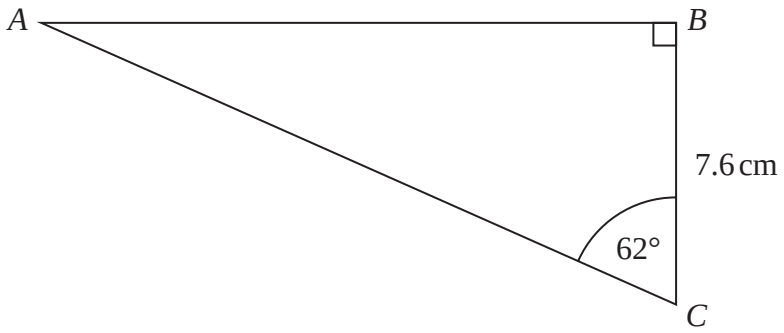
23 Jana used her calculator to find the value of a number t.
The answer on her calculator began 10.2

Complete the error interval for t.

..... $\leqslant t <$ .....

(Total for Question 23 is 2 marks)

24 *ABC* is a right-angled triangle.



Calculate the length of *AB*.
Give your answer correct to 1 decimal place.

..... cm

(Total for Question 24 is 2 marks)

10 (a) Write $23\,619$ to the nearest 1000

.....

(1)

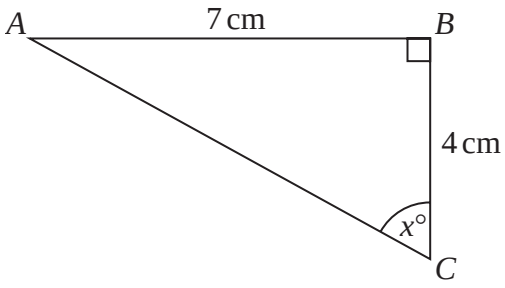
(b) Work out an estimate for the value of 5.9×98.1

.....

(2)

(Total for Question 10 is 3 marks)

26 ABC is a right-angled triangle.



Calculate the value of x.
Give your answer correct to 1 decimal place.

$x =$ .....

(Total for Question 26 is 2 marks)

26 Karim rounds a number, n, to 1 decimal place.
The result is 23.8

Complete the error interval for n.

..... $\leqslant n <$ .....

(Total for Question 26 is 2 marks)