Surname	
Other Names	
Candidate's Signature	

GCSE 9 - 1 Questions

Limits and Boundaries 2

Calculator Allowed

INSTRUCTIONS TO CANDIDATES

- Write your name in the space provided.
- Write your answers in the spaces provided in this question paper.
- Answer ALL questions.
- Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.
- You should have a ruler, compass and protractor where required.

Total Marks :

1) Find the least and greatest total length of 9 pencils, each measuring 7 cm to the nearest cm.

Least length = _____ cm

Greatest length = _____ cm [2]

2) Jake's car has travelled a total of 31 500 miles, correct to the nearest 100 miles.

For each hour that the car travelled, he estimates that it travelled 46 miles, correct to the nearest mile.

Calculate the least number and greatest number of hours that Jake's car could have taken to travel this distance.
Give your answers correct to the nearest hour. [5]

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Least number of hours taken .....

Greatest number of hours taken .....

3) The length of a corridor wall is 68 metres, correct to the nearest metre.

Decorative wall tiles each have a length of 36 cm, correct to the nearest cm.

A decorator is given the job of fitting one single row of these tiles, lengthwise, side by side, along the top of one wall of the whole corridor.

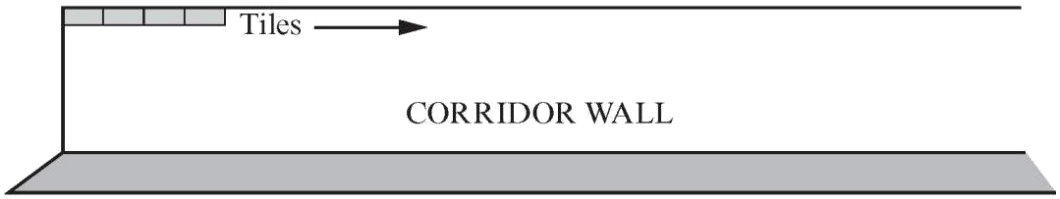

Diagram not drawn to scale

Showing all your calculations, find the least possible number of tiles and the greatest possible number of tiles required.

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[6]

4) Lois ran 7 km in 25 minutes and 23 seconds.

The distance was measured correct to the nearest 10 metres.
The time was measured correct to the nearest second.

Calculate her greatest possible average speed.
Give your answer in metres per second.
You **must** show how you arrived at your answer. [6]

5) A piece for a jigsaw is made in the shape of a right-angled triangle.
The piece has to be accurate so that the overall jigsaw fits together correctly.
The lengths shown on the right-angled triangle are correct to the nearest millimetre.

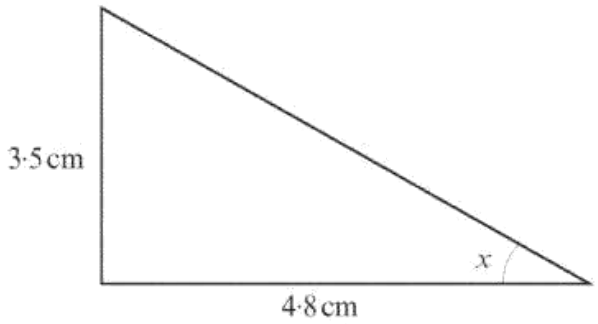

Diagram not drawn to scale

Calculate the **greatest** and **least** possible values for angle x.

Greatest value of x = ... ° Least value of x = ... °

[4]

6) Tiles are laid end to end without any gaps along one edge of a driveway.
The length of each tile is 8·5cm **correct to the nearest millimetre**.
The length of the driveway is 126 metres **correct to the nearest metre**.
The tiles are sold in boxes of 12 tiles.

Calculate the greatest number of boxes of tiles that would be needed. [5]

7) A building yard stores 140 tonnes of gravel, measured correct to the nearest tonne.
The gravel is then packed into bags that can hold 650 kg of gravel, measured correct to the nearest 10 kg.
Calculate the minimum number of bags that may be required. [5]

Remember: **1 tonne = 1000 kilograms**

8)

Stylish computer desk Made of laminate wood. Non-scratch top. **Length is exactly 2000 mm**	

Luc wants this new desk for his bedroom.

The desk is to fit on the straight wall between his wardrobe and his bookcase.

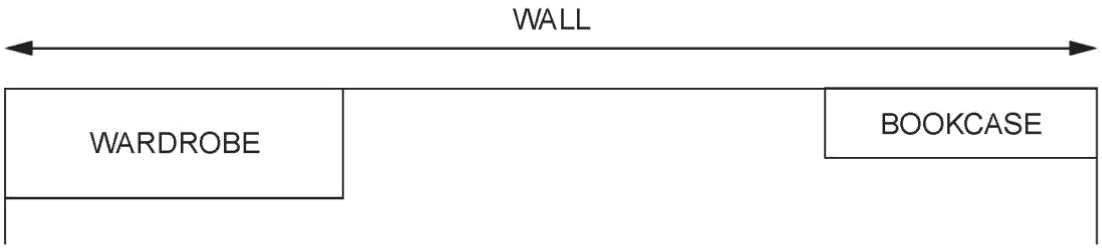

Diagram not drawn to scale

Luc has measured the length of

- the wall, which is 600 cm, correct to the nearest 10 cm,
- the bookcase, which is 147 cm, correct to the nearest 1 cm,
- the wardrobe, which is 250 cm, correct to the nearest 1 cm.

(a) What is the greatest possible length of the wall?
Circle your answer. [1]

600 cm 605 cm 645 cm 610 cm 650 cm

(b) What is the least possible length of the wardrobe?
Circle your answer. [1]

249 cm 249·45 cm 249·49 cm 249·5 cm 250 cm

(c) Can Luc be certain that this desk will fit in the space available?

You must
- show all your calculations,
- give the greatest or least bounds of any measurements used in calculations or comparisons,
- give a reason for your answer. [5]

9) A water company engineer is investigating a leaking pipe.
He finds that, between 2:00 p.m. and 7:00 p.m., the volume of water that has leaked from the pipe was 8 litres, **measured correct to the nearest litre**.

Calculate the greatest possible volume of water that would be lost in 7 days at this rate. [4]

10) A baker requires 825 kg of flour.
She buys the flour in bags that contain 36 kg of flour, correct to the nearest kg.

Is she guaranteed to have enough flour if she buys 23 of these bags?
You must show the calculations needed to decide your answer. [3]

11) Mair will be competing in a half-marathon race.

She uses a route for training that is 10000 metres long, measured correct to the nearest 100 metres.

Her first complete training run took 73 minutes, measured correct to the nearest minute.

Complete the table below to show the least and greatest distance of her route and the least and greatest time of her training run. [4]

	Least Value	Greatest Value
Distance	..... metres	..... metres
Time	..... minutes	..... minutes

12) A rectangle measures 38 cm by 26 cm.
Each measurement is correct to the nearest cm.
Calculate the least possible area of the rectangle. [2]

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13) A handrail along a straight path is 60 metres long, measured correct to the nearest 10cm.

Thin strips of metal of length 40cm. Measured correct to the nearest centimetre, are attached, end to end, along the handrail.

These metal strips must cover the whole length of the handrail.

What is the minimum number of metal strips required to guarantee that the whole length of the handrail is covered?

[?]