



Aberdare Community School  
Mathematics Department

WJEC GCSE  
**Higher – Non Calculator**  
Number

## **Upper and lower bounds**

Name: .....

Set: .....

Date: .....

Teacher: .....

- (h) Two pieces of string have lengths 23 cm and 14 cm measured correct to the nearest cm. What is the maximum possible total length of the two pieces of string?

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[1]

13. A jug has a volume of  $1000 \text{ cm}^3$ , measured to the nearest  $50 \text{ cm}^3$ .

(a) Write down the least possible value of the volume of the jug and the greatest possible value of the volume of the jug.

Least possible volume .....  $\text{cm}^3$       Greatest possible volume .....  $\text{cm}^3$   
[2]

Water is poured from the jug into a tank of volume 52 litres measured to the nearest litre.

(b) Explain, showing all your calculations, why it is always possible to pour water from 50 full jugs into the tank without overflowing.

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[5]

6.

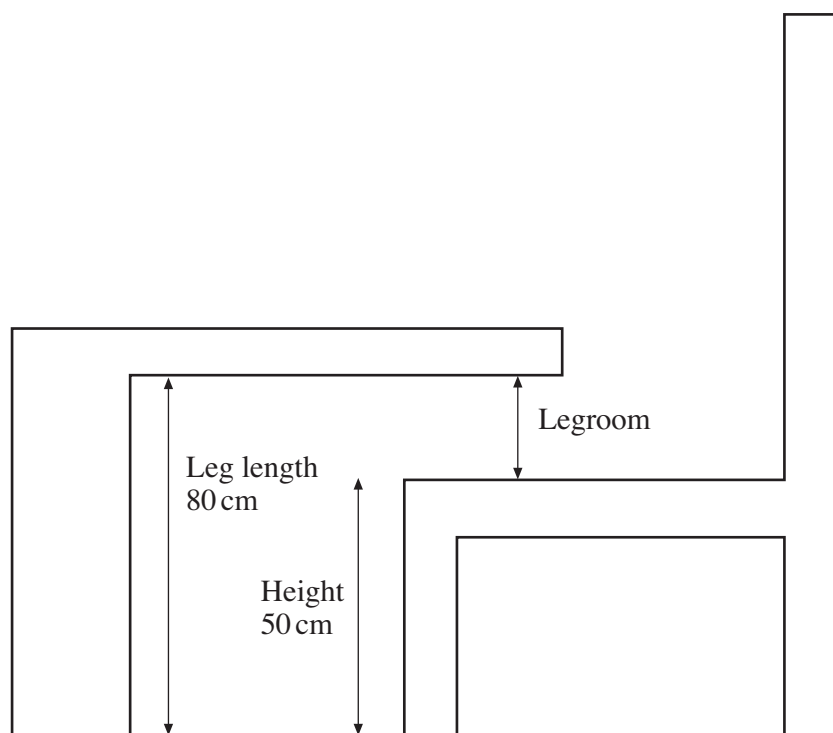
- (c) Two boxes have heights of 134 mm and 23 mm, each measured to the nearest mm.  
Find the maximum height when the boxes are placed one on top of the other.

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[1]

14.



*Diagram not drawn to scale.*

The legroom between a table and a chair is calculated by finding the difference between the length of the leg of a table and the height of the chair. In the diagram, both the height of the chair and the length of the leg of the table are given correct to the nearest cm.

Find, in centimetres, the least and greatest possible values of the legroom.

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Least ..... cm      Greatest ..... cm

[4]

8. The length of a table top is 2050 mm, measured to the nearest 10 mm.

(a) Write down the **least** and **greatest** possible values of the length of the table top.

Least value ..... mm                      Greatest value ..... mm

[2]

(b) The width of the table top is 1040 mm, measured to the nearest 10 mm.  
Find the least possible perimeter of the table top.

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[3]

14. A bag of potatoes weighs 3 kg **to the nearest kilogram**.  
A sack contains 5 bags of potatoes.

Complete the following sticker to attach to this sack of potatoes.

[2]



This sack of 5 bags  
of potatoes weighs  
**at least** ..... kg

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14. (a) Last month, Klaus sold his car.  
He was the only driver of the car.

His car's data readings for the past year showed that

- he had travelled 3000 miles, correct to the nearest 100 miles, and
- he had spent 80 hours driving, correct to the nearest hour.

(i) Write down the greatest and least values for the time spent and distance travelled by Klaus in his car during the past year, [2]

Distance travelled:

Least distance ..... Greatest distance .....

Time spent:

Least time ..... Greatest time .....

(ii) Write down the calculation Klaus would need to enter into his calculator to work out the greatest value for the average speed reading for his car during these journeys. You do not need to calculate the answer. [1]

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(b) Last week, Klaus bought a new car.

Klaus's first journey in his new car was 60 miles.  
This journey was made in a time of 2 hours.  
His second journey in his new car was  $x$  miles.  
This second journey was made in a time of  $y$  hours.

The times are correct, but each of the journey distances is only correct to the nearest mile.

Klaus wants to calculate the least value for the average speed for these two journeys combined.

Write down an expression in terms of  $x$  and  $y$  for the calculation Klaus would have to perform. [2]

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