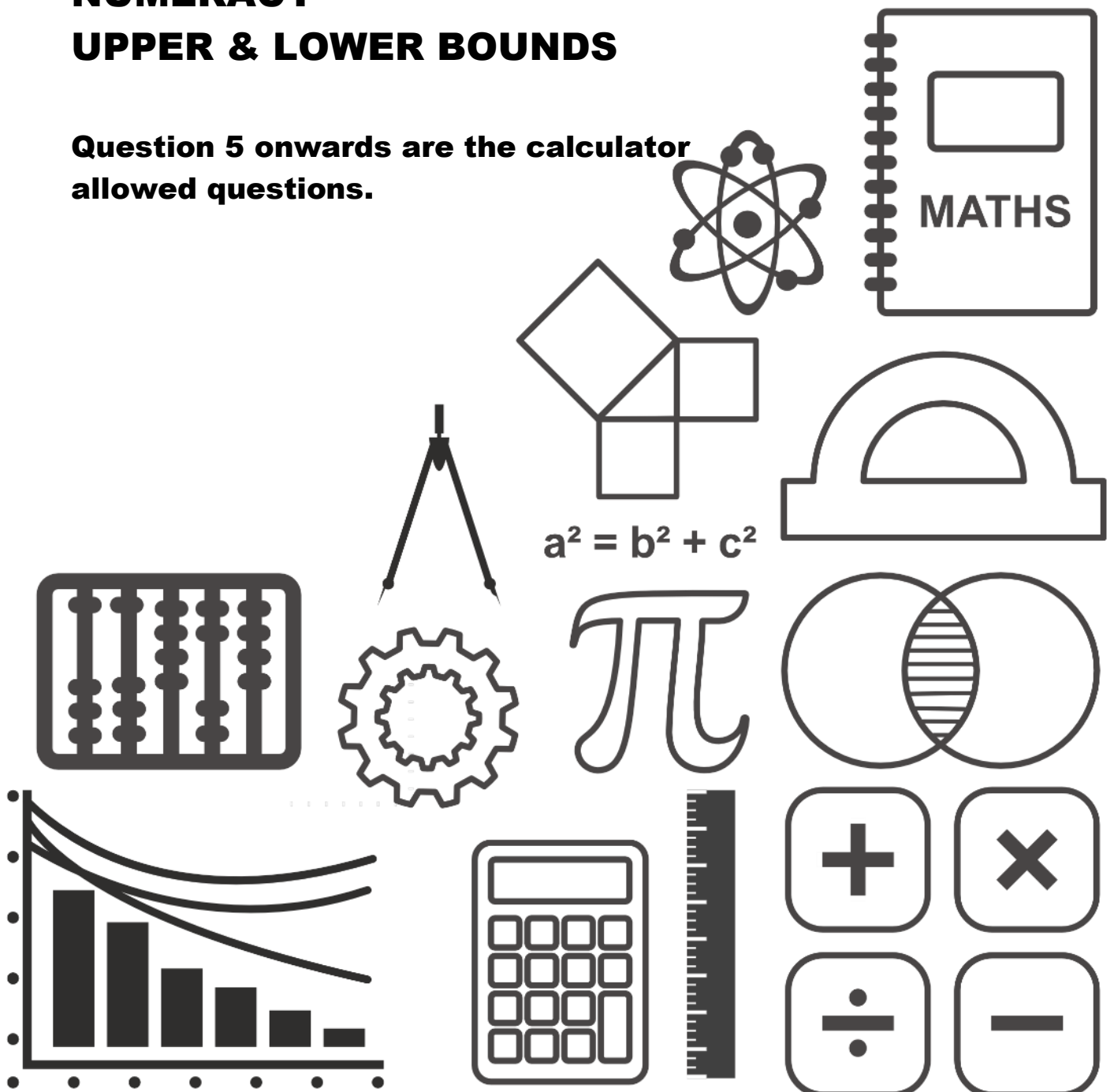


GCSE TOPIC BOOKLET NUMERACY UPPER & LOWER BOUNDS

Question 5 onwards are the calculator allowed questions.



1.

Gwilym is stacking 6 boxes in his garage.

The height of his garage is 2.5 m, correct to the nearest 10 cm.

5 of Gwilym's boxes each have a height of 40 cm, correct to the nearest 10 cm.

The other box has a height of 55 cm, correct to the nearest 5 cm.

Calculate the maximum possible gap between the stack of 6 boxes and the garage ceiling. [4]

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2.

Gareth's luggage weighed 21.13 kg.
This was over the maximum of 20 kg allowed.

Gareth removed items from his luggage so that its mass was:

- as close to 20 kg as possible,
- **not greater** than 20 kg.

From the following list of items, which **two** items did Gareth remove?
You must show all your working. [3]

Coat	Headphones	Jumper	Book	Hat
820g	300g	320g	340g	200g

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3. Michelle owns a café.
She stacks coffee mugs as shown in the diagram below.

Michelle measures the height of each coffee mug as 12 cm, **correct to the nearest centimetre**
Each stacked coffee mug creates 4 cm extra height, **correct to the nearest centimetre**.

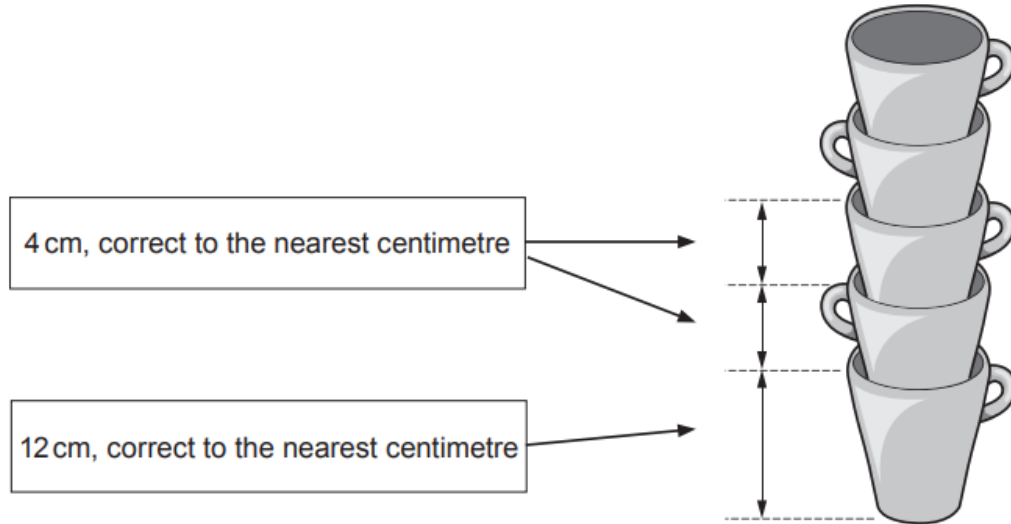


Diagram not drawn to scale

Michelle knows that the vertical height between two shelves is exactly 39 cm, as shown below.

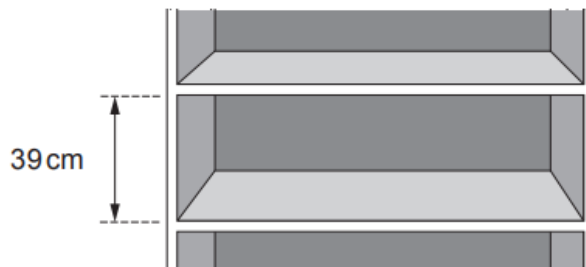


Diagram not drawn to scale

Can Michelle be certain that she will be able to place one stack of 7 coffee mugs between the two shelves?

Give a reason for your answer.

You must show all your working.

[5]

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4.

<p>Stylish computer desk</p> <p>Made of laminate wood. Non-scratch top.</p> <p>Length is exactly 2000mm</p>	
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Luc wants this new desk for his bedroom.

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

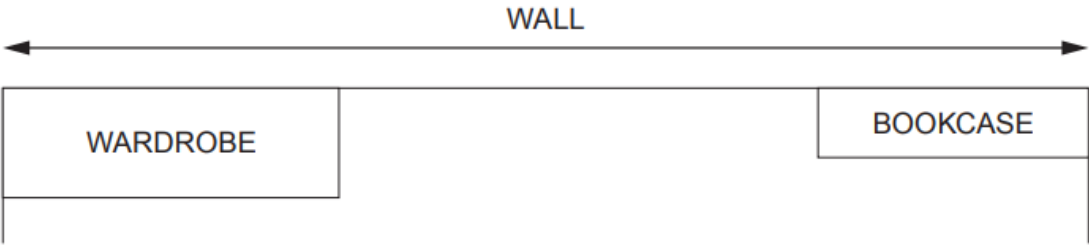


Diagram not drawn to scale

- 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

5. Ruth measures the lengths of 5 square pictures.
The measurements she records are as follows.

21 cm 22 cm 23 cm 24 cm 26 cm

Each of these measurements is **correct to the nearest cm**.

She plans to display all 5 pictures in a line, edge to edge, on a shelf of a bookcase.
The length of the shelf is 120 cm, **correct to the nearest 5 cm**.

Show that the shelf could be 1 cm too short to display all 5 of these pictures.
You must show all your working.

[4]

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6.



The rugby pitch at the stadium is measured.
On the diagram below, each measurement is given **correct to the nearest 10 centimetres**.

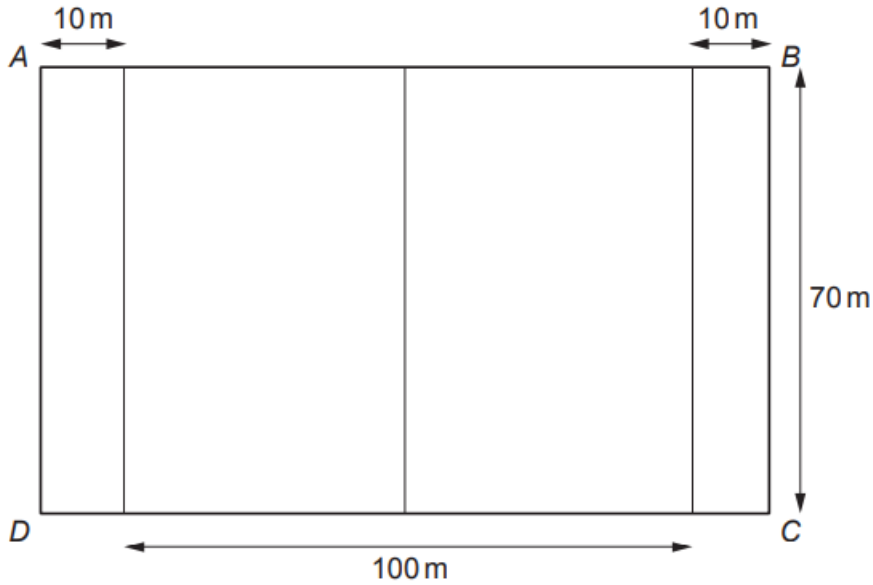


Diagram not drawn to scale

What is the least possible length of AB ?
Give your answer in metres.
You must show all your working.

[3]

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7. Sanjay stacks three boxes in a pile.
The heights of the boxes are 25 cm, 36 cm and 47 cm.
They are all measured correct to the nearest centimetre.
What is the greatest possible height of the stack of the three boxes?

[2]

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Greatest possible height of the stack of three boxes is cm