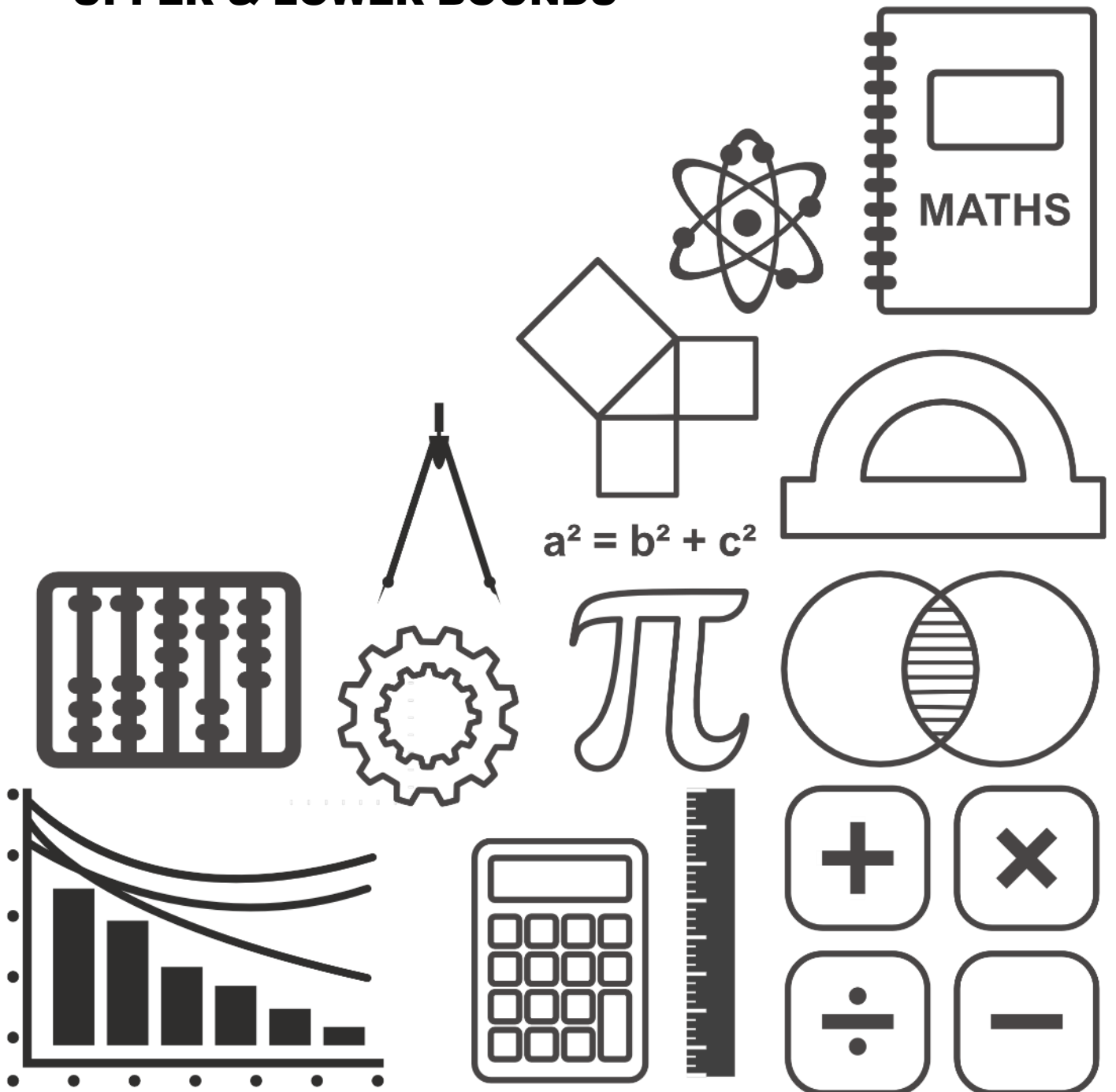


MATHSDIY

GCSE TOPIC BOOKLET UPPER & LOWER BOUNDS



1. The length of a plank of wood is 950 mm, measured to the nearest 10 mm. Write down the **least** and **greatest** possible values of the length of the plank.

Least value mm Greatest value mm [2]

2. The side of a square tile is 20 cm, measured to the nearest cm. Write down the least and the greatest lengths of the side of the tile.

Least length cm Greatest length cm [2]

3. The length of a roll of plastic sheeting is 500 cm, measured to the nearest 5 cm.

- (a) Write down the least possible length and greatest possible length of the roll of plastic sheeting.

Least possible length cm Greatest possible length cm [2]

- (b) A plastic sheet of length 100 cm, measured to the nearest 5 cm, is cut from the roll of plastic sheeting. Find the least possible length of the sheeting left on the roll.

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[3]

4. A truck can carry a load of 1600 kg, to the nearest 100 kg. A crate weighs 75 kg, correct to the nearest 5 kg. What is the maximum possible number of crates that could be placed on the truck?

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[4]

5. Two boxes are stacked one on top of the other.
 The height of one box is 57 cm correct to the nearest centimetre.
 The height of the other box is 38 cm correct to the nearest centimetre.
 Find the least height and the greatest height of the boxes when stacked one on top of the other.

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Least height cm

Greatest height cm

[2]

6. A DIY store sells lengths of kitchen worktops. There are two different suppliers of the worktops. One supplier, "Worktop Magic", states that the length of each worktop is 4000 mm, measured to the nearest 5 mm. The other supplier, "Worktops 4 U", states that the length of each worktop is $4000 \text{ mm} \pm 3 \text{ mm}$.

(a) Complete the following table.

	Least possible length	Greatest possible length
Worktop Magic mm mm
Worktops 4 U mm mm

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[3]

- (b) A customer requires a worktop to fit a length of at least 4.02 m. Would Worktop Magic or Worktops 4 U be able to supply a suitable worktop? Give a reason for your answer.

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[3]

7. A company makes paving slabs.
The dimensions of the paving slabs are:

Length	0.8 metres
Width	0.55 metres

Each dimension is measured correct to the nearest centimetre.

The company makes this claim in an advertisement:

100 paving slabs will cover an area of at least 43.5 m²

(a) Is this claim true? Show your working and give a reason for your answer.

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[4]

(b) Write down the maximum area that could be covered by 100 of these paving slabs.

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[2]

8. 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]

11. Fertiliser is sold in bags, each of mass 12 kg, correct to the nearest kg.

(a) Write down the least possible value and the greatest possible value of the mass of a bag.

Least possible mass kg Greatest possible mass kg
[2]

(b) (i) Find the least possible value and the greatest possible value of the mass of 100 bags.

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Least mass kg Greatest mass kg
 of 100 bags of 100 bags
[2]

(ii) Chris wishes to be sure that he delivers 1200 kg of fertiliser to a customer.
 Find the least number of bags Chris needs to deliver in order to be sure that at least
 1200 kg of fertiliser is delivered.

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[3]

12.

Wall tiles for sale

Length 30 cm Width 15 cm

All measurements to the nearest centimetre



(a) Is it always possible to tile an area of up to 8500cm^2 using 20 of these tiles?
You must give a reason and show your working.

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[4]

(b) Write down the maximum area that could be covered using 20 of these tiles.

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[2]

13. A time of 35.2 seconds, measured correct to the nearest tenth of a second, was recorded for the winner of a 300 metres race.
 The race track had been marked out to within an accuracy of $\pm 0.1\%$.
 Clearly explaining your reasoning, calculate the greatest and least possible values of the average speed of the winner, giving your answers in metres per second.

A series of horizontal dotted lines for writing the answer.

[7]

14.

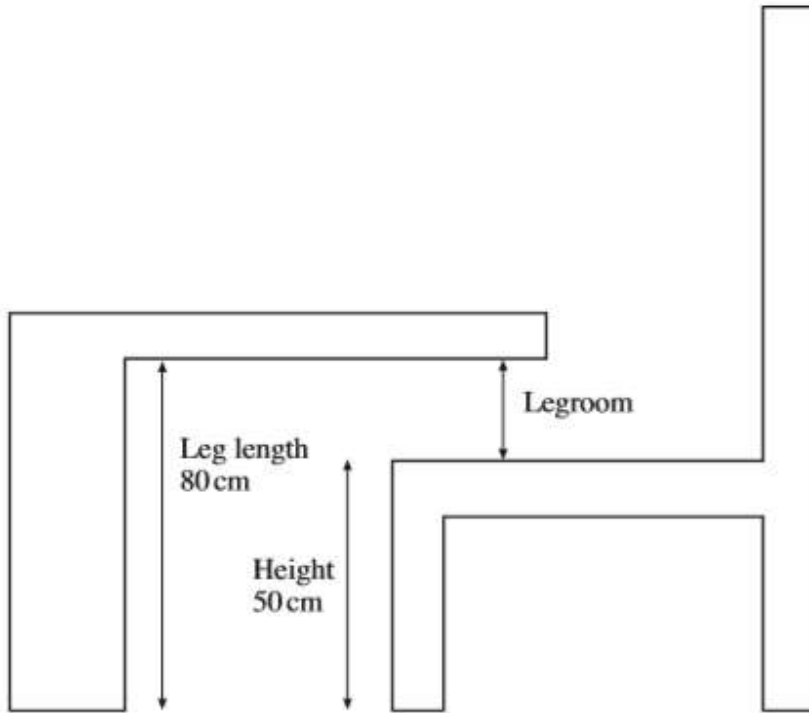


Diagram not drawn to scale.

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]

15. 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]