8. A jug has a volume of 500 cm^3, measured to the nearest 10 cm^3.

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

Least volume ..... cm^3 Greatest volume ..... cm^3

[2]

Water is poured from the jug into a tank of volume 15·5 litres measured to the nearest 0·1 litre.

(b) Explain, showing all your calculations, why it is always possible to pour water from 30 full jugs into the tank without overflowing.

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[5]

8. Blocks of wood are cut so that they have a mass of 10 kg measured to the nearest kg.

(a) Write down the least and greatest possible values of the mass of a block of wood.

Least mass ..... kg Greatest mass ..... kg

[2]

(b) (i) Find the least and greatest possible values of the mass of wood in 100 blocks.

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Least mass ..... kg in 100 blocks Greatest mass ..... kg in 100 blocks

(ii) Stanley wishes to be sure that he delivers 1000 kg of wood to a customer.
Find the least number of blocks Stanley needs to deliver in order to be sure that at least 1000 kg of wood is delivered.

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[5]

20. A time of 24·4 seconds, measured to the nearest tenth of a second, was recorded for the winner of a 200 metres race. The race track had been marked out to within an accuracy of ± 0·1%. Explaining clearly your reasoning, calculate the greatest and least possible values of the average speed of the winner, giving your answers in metres per second.

[5]

6. The capacity of a jug is 250 ml, measured to the nearest 10 ml.

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

Least capacity ..... ml Greatest capacity ..... ml

[2]

(b) The capacity of a bucket is 5·1 litres, measured correct to the nearest $\frac{1}{10}$ of a litre.

The jug is filled with water and then the water is poured into the bucket. This is done 20 times in all. Explain, showing all your calculations, why it is not always possible for the bucket to hold all this water.

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[5]

16. The diagram shows a cuboid with dimensions 2·6 cm, 3·4 cm and 4·2 cm measured correct to the nearest mm.
Two vertices are labelled on the diagram, P and Q.

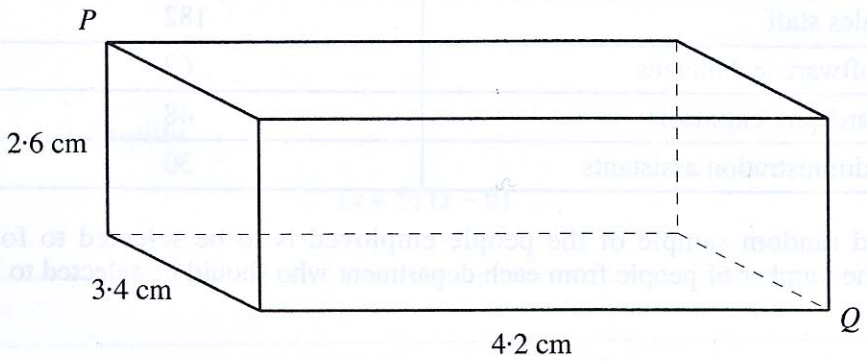

Diagram not drawn to scale.

Find the greatest length of diagonal PQ.

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[3]