

1 Fig. 1.1 shows a cuboid made of glass.

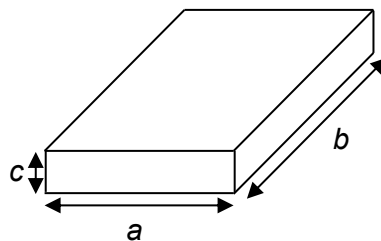


Fig. 1.1

A student measures the mass m of the cuboid and the side lengths a , b and c . The measurements are shown in Table 1.1.

Table 1.1

quantity	measurement
m	$(0.234 \pm 0.002) \text{ kg}$
a	$(5.13 \pm 0.01) \text{ cm}$
b	$(11.38 \pm 0.01) \text{ cm}$
c	$(1.72 \pm 0.01) \text{ cm}$

(a) Determine the density ρ of the glass.

$$\rho = \dots\dots\dots \text{ kg m}^{-3} \quad [1]$$

(b) Determine the value of ρ together with its actual uncertainty.
Give your answer to an appropriate number of significant figures.

$$\rho = \dots\dots\dots \pm \dots\dots\dots \text{ kg m}^{-3} \quad [3]$$

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- (c) The true value of the density of the glass is different from the answer in (a) because of a systematic error in the measurements.

Suggest **one** possible cause of this systematic error.

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[Total: 6]