

1 (a) Define density.

[1]

(b) Fig. 1.1 shows a cuboidal glass block.

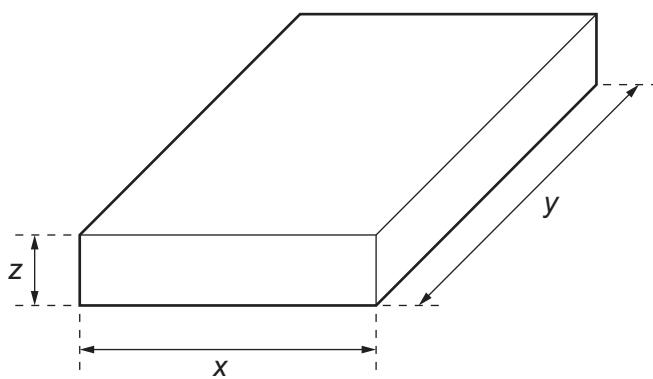


Fig. 1.1 (not to scale)

A student measures the mass m of the block and the side lengths x , y and z . The measurements are shown in Table 1.1.

Table 1.1

quantity	measurement
m	$(0.243 \pm 0.001)\text{kg}$
x	$(5.41 \pm 0.01)\text{cm}$
y	$(11.09 \pm 0.01)\text{cm}$
z	$(1.62 \pm 0.01)\text{cm}$





- (i) Determine the density of the glass.

density = kg m^{-3} [2]

- (ii) Calculate the percentage uncertainty in the density.

percentage uncertainty = % [3]

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

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

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[1]

[Total: 7]