**1** **(a)** Define density.

.....

..... [1]

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

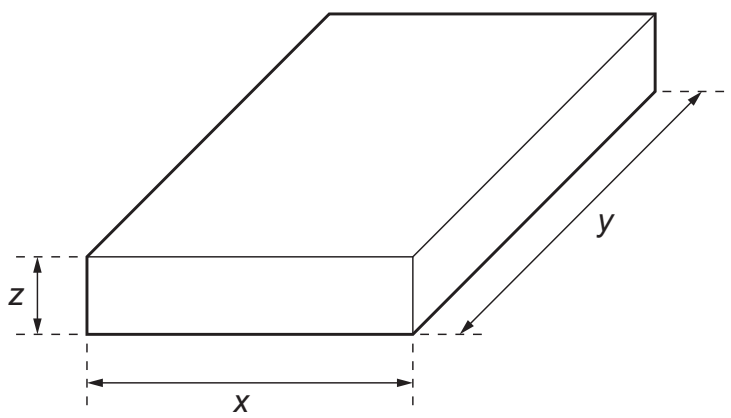


**Fig. 1.1** (not to scale)

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 ± 0.001) kg |
| $x$ | (5.41 ± 0.01) cm |
| $y$ | (11.09 ± 0.01) cm |
| $z$ | (1.62 ± 0.01) 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.

.....

.....

..... [1]

[Total: 7]