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Problem 6

The sides of a sugar cube are found to have a length of 1.702 cm with an uncertainty of 0.240 cm. Find the volume, V_{m} .

$$\begin{aligned} V &= l^3 \\ V &= (1.702 \text{ cm})^3 \\ &= 4.93 \text{ cm}^3. \end{aligned}$$

$$\begin{aligned} \Delta V &= |4.93| \times 3 \times \frac{0.240 \text{ cm}}{1.702 \text{ cm}} \\ &= 2.09 \text{ cm}^3. \end{aligned}$$

$$V_{\text{m}} = 4.93 \pm 2.09 \text{ cm}^3.$$