

36. (a) For the minimum (43 cm) case, 9 cubit converts as follows:

$$(9 \text{ cubit}) \left(\frac{0.43 \text{ m}}{1 \text{ cubit}} \right) = 3.9 \text{ m} .$$

And for the maximum (43 cm) case we obtain

$$(9 \text{ cubit}) \left(\frac{0.53 \text{ m}}{1 \text{ cubit}} \right) = 4.8 \text{ m} .$$

- (b) Similarly, with $0.43 \text{ m} \rightarrow 430 \text{ mm}$ and $0.53 \text{ m} \rightarrow 530 \text{ mm}$, we find $3.9 \times 10^3 \text{ mm}$ and $4.8 \times 10^3 \text{ mm}$, respectively.
- (c) We can convert length and diameter first and then compute the volume, or first compute the volume and then convert. We proceed using the latter approach (where d is diameter and ℓ is length).

$$\begin{aligned} V_{\text{cylinder, min}} &= \frac{\pi}{4} \ell d^2 = 28 \text{ cubit}^3 \\ &= (28 \text{ cubit}^3) \left(\frac{0.43 \text{ m}}{1 \text{ cubit}} \right)^3 \\ &= 2.2 \text{ m}^3 . \end{aligned}$$

Similarly, with 0.43 m replaced by 0.53 m , we obtain $V_{\text{cylinder, max}} = 4.2 \text{ m}^3$.