

Ex: 27.7

1.  $a = 4 \text{ cm}$ .

a)

$$\begin{aligned} \text{Area of a cube} &= 6a^2 \\ &= 6 \times 4^2 \\ &= 96 \text{ cm}^2 \end{aligned}$$

$$\text{Area factor} = \frac{1}{4}$$

$$\begin{aligned} \text{Area of smaller cube} &= \frac{1}{4} \times 96 \\ &= \underline{\underline{24 \text{ cm}^2}} \end{aligned}$$

b.  $6a^2 = 24$

$$a^2 = \frac{24}{6}$$

$$= 4$$

$$a = \underline{\underline{2 \text{ cm}}}$$

2. a) length = 6 cm

$$\begin{aligned} \text{SA of cube} &= 6a^2 \\ &= 6 \times 6^2 \\ &= 216 \text{ cm}^2 \end{aligned}$$

b) SA of cylinder = SA of cube (given)

$$2\pi r(r+h) = 216$$

$$2\pi \times 2(2+h) = 216$$

$$4\pi(2+h) = 216$$

$$2+h = \frac{216}{4\pi}$$

$$h = \frac{216}{4\pi} - 2$$

$$= \underline{\underline{15.2 \text{ cm}}}$$

3a. SA of small  
cylinder =  $2\pi r(r+h)$

$$= 2\pi \times 3(3+2)$$

$$= 30\pi$$

$$= \underline{\underline{94.26 \text{ cm}^2}}$$

b) SA of taller cylinder =  $2\pi r_1(1+h)$

$$2\pi(1+h) = 94.26$$

$$1+h = \frac{94.26}{2\pi}$$

$$= 15$$

$$h = 15 - 1 = \underline{\underline{14 \text{ cm}}}$$

4. SA =  $2(wl + lh + wl)$

$$= 2(4 \times 3 + 3 \times 2 + 4 \times 2)$$

$$= 52 \text{ cm}^2$$

$$2(wl + lh + wh) = 52$$

$$2(1 \times 4 + h + 4h) = 52$$

$$4 + 5h = \frac{52}{2} = 26$$

$$5h = 26 - 4$$

$$= 22$$

$$h = \frac{22}{5}$$

$$= \underline{\underline{4.4 \text{ cm}}}$$

Volume of a prism

A prism is any three-dimensional object which has a constant cross-sectional area.

Volume of prism = area of cross-section  $\times$  length.

Volume of cuboid =  $lbb$

Line: