

Solutions

Marking: **M1** a correct method, **A1** the correct answer.

Each answer shows the steps, then the **result**.

2.1

- $\sqrt{196} = \mathbf{14}$

2.2

- $\sqrt[3]{27} = 3$ and $4^2 = 16$
- $3 + 16 = \mathbf{19}$

2.3

- $\sqrt{144} = 12$, $\sqrt[3]{64} = 4$
- $12 - 4 = \mathbf{8}$

3.1

- $3^3 = 27$, $\sqrt{121} = 11$
- $27 - 11 = \mathbf{16}$

3.2

- $\sqrt{169} = 13$, $\sqrt[3]{125} = 5$
- $13 \times 5 = \mathbf{65}$

3.3

- $2^2 + 3^2 + 6^2 = 4 + 9 + 36 = 49$
- $\sqrt{49} = \mathbf{7}$

3.4

(a)

- edge = $\sqrt[3]{2197} = \mathbf{13}$ cm
- surface area = $6 \times 13^2 = 6 \times 169 = \mathbf{1014}$ cm²

(b)

- lengths $1 : 2$, so areas $1^2 : 2^2 = \mathbf{1 : 4}$
- volumes $1^3 : 2^3 = \mathbf{1 : 8}$
- area squares the length ratio; volume cubes it

(c)

- $\sqrt[3]{\frac{64}{125}} = \frac{4}{5}$

- $\sqrt{\frac{81}{16}} = \frac{9}{4}$

$$\frac{4}{5} \times \frac{9}{4} = \frac{\mathbf{9}}{5}$$