Related length/area/volume factors

6 questions | 13 marks

Equivalent correct methods earn the corresponding marks.

1. Similar solids have length factor 2. Give area and volume factors. [2 marks]

$2^2 = 4$; $2^3 = 8$.

Answer: 4 and 8

2. A similar enlargement has $k = 1.5$ and original area 24 cm². Find new area. [2 marks]

$24 \times 1.5^2 = 54$.

Answer: 54 cm²

3. A solid of volume 40 cm³ is similarly enlarged with $k = 3$. Find volume. [2 marks]

$40 \times 27 = 1080$.

Answer: 1080 cm³

4. Similar areas are 18 and 50 cm². Find the length ratio. [2 marks]

$18 : 50 = 9 : 25$.

Square roots give $3 : 5$.

Answer: $3 : 5$

5. Similar volumes are 27 and 216 cm³. Find the small-to-large length factor. [2 marks]

$\frac{216}{27} = 8$; $\sqrt[3]{8} = 2$.

Answer: 2

6. A similar solid doubles its surface area. Give its exact volume factor. [3 marks]

Length factor $\sqrt{2}$.

Volume factor $(\sqrt{2})^3 = 2\sqrt{2}$.

Answer: $2\sqrt{2}$