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]

$24\times1.5^2=54$.

Answer: 54 cm²

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

$40\times27=1080$.

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]

216/27=8; cube root 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: $2\sqrt{2}$