Finding missing lengths by similarity

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. Two similar triangles have corresponding sides 5 cm and 15 cm. Find the scale factor from the first to the second. [2 marks]

$k = \frac{15}{5} = 3.$

Answer: 3

2. With scale factor 3, an original side is 8 cm. Find its image length. [2 marks]

$8 \times 3 = 24$ cm.

Answer: 24 cm

3. A 28 cm image side was made using scale factor 4. Find its original length. [2 marks]

$28 \div 4 = 7$ cm.

Answer: 7 cm

4. Similar rectangles measure 8 cm by 5 cm and 20 cm by w cm. Find w. [2 marks]

$k = \frac{20}{8} = 2.5.$

$w = 5 \times 2.5 = 12.5$ cm.

Answer: 12.5 cm

5. A 1.8 m person casts a 1.2 m shadow. A flagpole casts a 6 m shadow at the same time on level ground. Find its height. [3 marks]

Shadow scale factor $= \frac{6}{1.2} = 5.$

Height $= 1.8 \times 5 = 9$ m.

Answer: 9 m

6. Similar triangles have perimeters 24 cm and 60 cm. A side of the larger is 22.5 cm. Find the corresponding smaller side. [3 marks]

Length factor is $\frac{60}{24} = 2.5.$

Smaller side $= \frac{22.5}{2.5} = 9$ cm.

Answer: 9 cm