Solutions

Award method and answer marks as indicated; accept equivalent correct methods.

2.1

- $k = 12/3 = \mathbf{4}$.

2.2

- $L = kl = 3(7) = \mathbf{21}$ cm.

2.3

- $l = L/k = 24/4 = \mathbf{6}$ cm.

2.4

- $6/4 = 1.5$ and $9/6 = 1.5$ with equal right angles, so **yes**.

3.1

(a)

- AB corresponds to DE: $k = 9/6 = \mathbf{1.5}$.

(b)

- $EF = 1.5(8) = \mathbf{12}$ cm; $DF = 1.5(10) = \mathbf{15}$ cm.

(c)

- $P_{DEF} = 9 + 12 + 15 = \mathbf{36}$ cm; $P_{ABC} = 24$ cm, so the perimeter is **1.5 times** as large.

3.2

(a)

- Use $k = \text{new/original} = 9/4 = \mathbf{2.25}$.
- Longer side $L = kl = 2.25(6) = \mathbf{13.5}$ cm.

(b)

- Shorter-side ratio $k_s = 6/4 = 1.5$.
- Longer-side ratio $k_l = 12/6 = 2$.
- They differ, so the third rectangle is **not similar** to A.

3.3

- Scale factor $= \dfrac{25}{10} = 2.5$.
- Height $= 15 \times 2.5 = \mathbf{37.5}$ cm.

3.4

(a)

- Scale factor from PQR to XYZ is $\dfrac{8}{12} = \dfrac{2}{3}$.
- $YZ = 9 \times \dfrac{2}{3} = \mathbf{6}$ cm.

(b)

- $\mathbf{70}^\circ$: corresponding angles in similar triangles are equal.