Worked answers | Ratio, rates and similarity

Enlargement and scale factors

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. Enlarge $(2, 5)$ by factor 3 about the origin. [2 marks]

$(2 \times 3, 5 \times 3) = (6, 15)$.

Answer: $(6, 15)$

2. Reduce $(-8, 4)$ by factor $\frac{1}{4}$ about the origin. [2 marks]

$(\frac{-8}{4}, \frac{4}{4}) = (-2, 1)$.

Answer: $(-2, 1)$

3. For an origin-centred enlargement, $(3, 2)$ maps to $(12, 8)$. Find the scale factor. [2 marks]

$\frac{12}{3} = 4$ and $\frac{8}{2} = 4$.

Answer: 4

4. A shape has perimeter 18 cm. It is enlarged by factor 1.5. Find its new perimeter. [2 marks]

Every side is multiplied by 1.5, so perimeter $= 18 \times 1.5 = 27$ cm.

Answer: 27 cm

5. Find the image of $P(5, 2)$ under factor 3 about $C(2, 1)$. [3 marks]

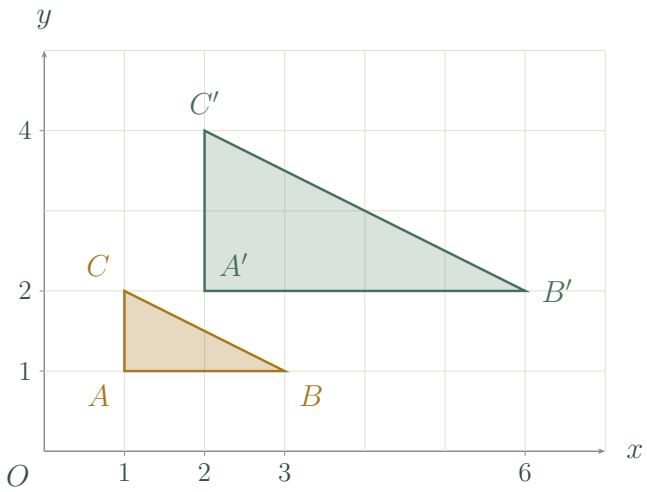
Displacement is $(3, 1)$.

Scaled displacement is $(9, 3)$.

Add C to get $(11, 4)$.

Answer: $(11, 4)$

6. In the supplied diagram, name the centre and scale factor taking ABC to its image. [3 marks]



Original and image

Each image point lies on the same ray from O as its original.

Both coordinates and each distance from O are doubled.

Answer: Centre $O(0, 0)$, scale factor 2.