Year 9 Bearings and Transformations – Developing

ANSWER KEY HappyKids.fit

Answers and worked solutions · 10 questions

A. Use transformations and scale

1. **(−7, 1)**

AP is 1/4 of AB

AB: x changes by −12, y by 4

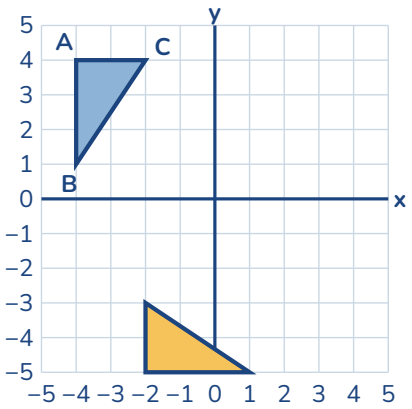
1/4 of these: −3 and 1, so P = (−7, 1)

2. **A" (−2, −5), B" (1, −5), C" (−2, −3)**

First: A → (−4, −4), B → (−1, −4), C → (−4, −2)

Then: A" (−2, −5), B" (1, −5), C" (−2, −3)

The final image is congruent to ABC

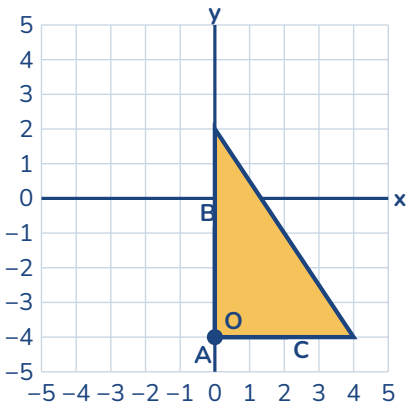


3. **A' (0, −4), B' (0, 2), C' (4, −4)**

The centre is on the triangle

Multiply the distance (across and up) from O to each corner by 2

A (0, −4) → (0, −4), B (0, −1) → (0, 2), C (2, −4) → (4, −4)

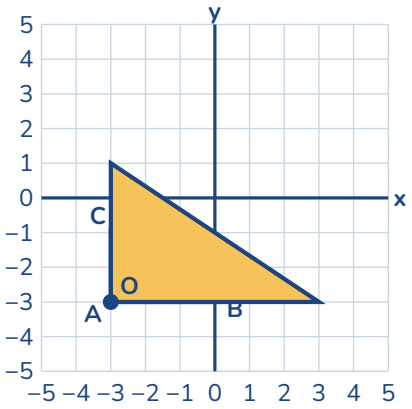


4. **A' (−3, −3), B' (3, −3), C' (−3, 1)**

The centre is on the triangle

Multiply the distance (across and up) from O to each corner by 2

A (−3, −3) → (−3, −3), B (0, −3) → (3, −3), C (−3, −1) → (−3, 1)



5. scale factor 2; centre (–5, 4)

Compare a pair of sides: each side of B is 2 times as long
Draw lines through matching corners; they meet at the centre
Centre (–5, 4): e.g. (–5, 4) → (–1, 3) is (4, –1), and × 2 reaches (3, 2)

6. side 9 cm; perimeter 36 cm; area 81 cm^2

Original side $\sqrt{9} = 3$ cm
Image side $3 \times 3 = 9$ cm, perimeter $4 \times 9 = 36$ cm
Area $9^2 = 81\ cm^2$ (× 9)

7. scale factor 5; width 15 cm

Area scale factor = $675 \div 27 = 25$
Length scale factor = $\sqrt{25} = 5$
Width = $5 \times 3 = 15$ cm

8. 870 m

$5.8 \times 15\,000 = 87\,000$ cm
$87\,000 \div 100 = 870$ m

9. (7, 14)

From A to M: x changes by 5, y by 10
Do the same again from M: B = (7, 14)

10. 4 × 25 000 = 100 000 cm, and 1 km = 100 000 cm, so the distance is 1 km.

Error: divided by 10 000 instead of 100 000
$4 \times 25\,000 = 100\,000$ cm
$100\,000 \div 100\,000 = 1$ km