Year 9 Bearings and Transformations – Challenge

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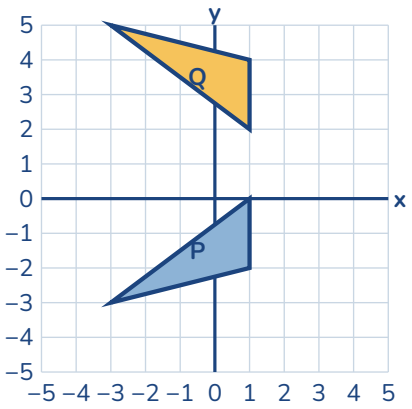
Year 9 · Maths · Bearings, Coordinates and Transformations · Level 3 Challenge · 8 questions

Name _____ **Date** _____

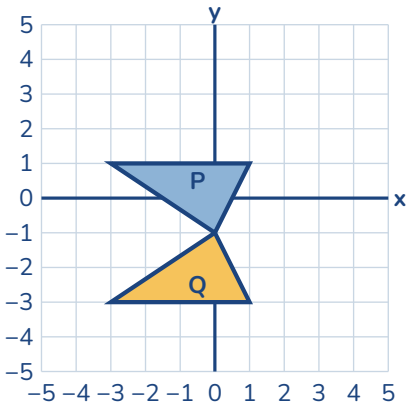
A. Think like a mathematician

1. Look at triangles P (corners (−3, −3), (1, −2), (1, 0)) and Q (corners (−3, 5), (1, 4), (1, 2), in matching order). Which single transformation takes P to Q? Describe it fully.



Answer _____

2. The triangle P with corners (−3, 1), (1, 1), (0, −1) is mapped onto the triangle Q with corners (−3, −3), (1, −3), (0, −1) (corners in the same order). Describe this single transformation fully.



Answer _____

3. A shape S is transformed like this: rotate it 90° anticlockwise about the origin, then enlarge it by scale factor 3 about the origin, then reflect it in the line y = −2. Is the final image congruent to S? Explain.

Answer _____

4. A rectangle has an area of 11 cm^2. It is enlarged by scale factor 4. Ivo says the new area is $4 \times 11 = 44$ cm^2. Explain the mistake and find the new area.

Answer _____

5. Dina says the midpoint of a line segment is always on the line segment. Is Dina right? Explain.

Answer _____

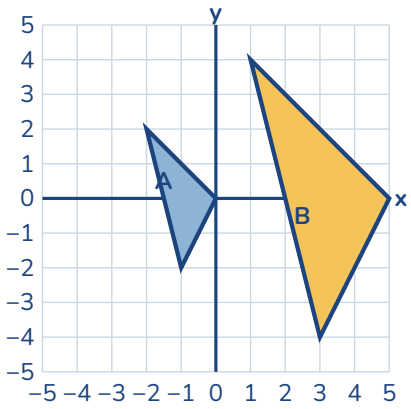
6. A rectangle 4 cm wide has an area of 32 cm^2. After an enlargement its area is 288 cm^2. What is the scale factor, and how wide is the image?

Answer _____

7. A drone flies 900 m from a launch point on a bearing of 153°. On a plan with a scale of 1 cm to 100 m, how long is its path, and what is the bearing of the launch point from the drone?

Answer _____

8. Triangle B, with corners (5, 0), (1, 4), (3, −4), is an enlargement of triangle A, with corners (0, 0), (−2, 2), (−1, −2) (in the same order). Find the scale factor and the centre of enlargement.



Answer _____