

Unit 1: Rigid Transformations and Congruence

ADVANCED

Name: _____ Date: _____

Show your work where needed, but write only the single final answer (a number, a coordinate pair like (3, -4), or a value with its degree symbol) in the answer box for each problem.

1. Point A(-27, 46) is translated by the rule $(x, y) \rightarrow (x + 38, y - 59)$. Give the coordinates of the image A'.

Answer: _____

2. Point B(-14, 23) is first reflected over the x-axis, and the resulting point is then reflected over the y-axis. Give the coordinates of the final image.

Answer: _____

3. Point C(-18, -25) is rotated 90° clockwise about the origin. Give the coordinates of the image C'.

Answer: _____

4. Point D(34, -17) is rotated 90° counterclockwise about the origin. Give the coordinates of the image D'.

Answer: _____

5. Point E(8, -6) is first rotated 90° counterclockwise about the origin, and the result is then translated by the rule $(x, y) \rightarrow (x - 15, y + 20)$. Give the coordinates of the final image.

Answer: _____

6. Point F(-11, 4) is first reflected over the line $y = x$, and the result is then reflected over the x-axis. Give the coordinates of the final image.

Answer: _____

7. A translation maps point A(-52, 17) to A'(-9, -40). Written as $(x + a, y + b)$, give the translation vector as the ordered pair (a, b).

Answer: _____

8. Point G(7, -13) is first rotated 180° about the origin, and the result is then reflected over the y-axis. Give the coordinates of the final image.

Answer: _____

9. Point H(10, -8) is reflected over the vertical line $x = -3$. Give the coordinates of the image H'.

Answer: _____

10. Point J(-12, -7) is reflected over the horizontal line $y = 5$. Give the coordinates of the image J'.

Answer: _____

11. A quadrilateral has side lengths 27, 39, 46, and 58 units. It undergoes a sequence of translations, rotations, and reflections. What is the perimeter, in units, of its final image?

Answer: _____

12. In triangle ABC, angle A = 47° and angle B = 88° . Triangle ABC is mapped by a sequence of rigid transformations onto triangle A'B'C'. What is the measure of angle C'?

Answer: _____