

Unit 1: Constructions and Rigid Transformations

PRACTICE

Name: _____ Date: _____

Solve each problem and write your final answer on the line. Show coordinates as (x, y) and angles in degrees.

1. Point A is at $(5, 2)$. Reflect A across the x-axis. What are the coordinates of the image A'?

Answer: _____

3. Translate the point $(4, -1)$ by the rule $(x, y) \rightarrow (x + 3, y + 5)$. What are the coordinates of the image?

Answer: _____

5. Point Q is at $(8, -4)$. Rotate Q 180° about the origin. What are the coordinates of the image Q'?

Answer: _____

7. A translation maps the point $(1, 3)$ to the point $(7, 8)$. What are the coordinates of the image of $(0, 0)$ under the same translation?

Answer: _____

9. The center of a circle is at $(0, 0)$ and it passes through the point $(3, 4)$. What is the radius of the circle? (Use $\text{radius} = \sqrt{x^2 + y^2}$.)

Answer: _____

11. Reflect the point $(-4, 9)$ across the x-axis, then reflect the result across the y-axis. What are the final coordinates?

Answer: _____

2. Point B is at $(-3, 7)$. Reflect B across the y-axis. What are the coordinates of the image B'?

Answer: _____

4. Point P is at $(2, 6)$. Rotate P 90° counterclockwise about the origin. Use the rule $(x, y) \rightarrow (-y, x)$. What are the coordinates of the image P'?

Answer: _____

6. Reflect the point $(-6, -5)$ across the line $y = x$. Use the rule $(x, y) \rightarrow (y, x)$. What are the coordinates of the image?

Answer: _____

8. Point M is at $(9, -2)$. Rotate M 90° clockwise about the origin. Use the rule $(x, y) \rightarrow (y, -x)$. What are the coordinates of the image M'?

Answer: _____

10. Segment CD has endpoints C(2, 3) and D(8, 11). A perpendicular bisector construction meets CD at its midpoint. What are the coordinates of that midpoint?

Answer: _____

12. A translation is defined by the rule $(x, y) \rightarrow (x - 5, y + 2)$. It maps a point to the image $(0, 0)$. What were the coordinates of the original point?

Answer: _____