1. Write the equation of the vertical line that is 6 units to the left of the origin.

2. Write the equation of the horizontal line that is 3 units below the origin.

3. What is the image of A(5, 2) under \( R_{90^\circ} \)?

4. Write the coordinates of \( P' \), the image of \( P(5, -1) \) after a clockwise rotation of \( 180^\circ \) about the origin.

5. What is the image of point \((-3, 7)\) after a reflection in the x-axis?

6. If \( M(-2, 8) \) is reflected in the y-axis, what are the coordinates of \( M' \), the image of \( M \)?

7. What is the image of \((5, -2)\) under the transformation \( r_{y = x} \)?

8. The coordinates of the endpoints of \( \overline{AB} \) are \( A(0, 2) \) and \( B(4, 6) \). Graph and state the coordinates of \( A' \) and \( B' \), the images of \( A \) and \( B \) after \( \overline{AB} \) is reflected in the x-axis.

9. Triangle \( ABC \) has coordinates \( A(2, 0) \), \( B(1, 7) \), and \( C(5, 1) \). On the accompanying set of axes, graph, label, and state the coordinates of \( \triangle A'BC' \), the reflection of \( \triangle ABC \) in the y-axis.

10. A polygon \( ABCD \)
   a) On graph paper, draw the polygon \( ABCD \) whose vertices are \( A(-4, 0) \), \( B(0, 0) \), \( C(3, 3) \), and \( D(-4, 3) \).
   b) Find the area of polygon \( ABCD \).
11. Triangle XYZ, shown in the diagram below, is reflected over the line \( x = 2 \). State the coordinates of \( \Delta X'Y'Z' \), the image of \( \Delta XYZ \).

12. The accompanying graph shows the relationship between kinetic energy, \( y \), and velocity, \( x \). Draw the reflection of this graph in the line \( y = x \).

In 13–20:

a) Find the image of \( P(5, -3) \) under each of the given transformations.

b) Name a fixed point of the transformation if one exists.

13. \( r_{x-axis} \)

14. \( R_0 \)

15. \( R_{90^\circ} \)

16. \( T_{0,3} \)

17. \( r_{x-axis} \circ T_{2,2} \)

18. \( r_{x-axis} \circ r_{y=x} \)

19. \( r_{y=x} \circ r_{x-axis} \)

20. \( R_{(2,2)} \circ T_{3, -3} \)

21. What is the image of \( A(-1, 3) \) under the translation \( T_{2,1} \)?

22. A translation maps the point \((2, 1)\) to a point \((-3, 2)\). What is the image of point \((4, -1)\) under the same translation?

23. The letters \( S \) and \( N \) have point symmetry. Print another letter that has point symmetry.

24. What transformations are opposite isometries?

25. What transformation is not an isometry?

26. \( \Delta ABC \)

a) On graph paper, locate the points \( A(3, 2) \), \( B(3, 7) \), and \( C(-2, 7) \). Draw \( \Delta ABC \).

b) Draw \( \Delta A'B'C' \), the image of \( \Delta ABC \) under a reflection in the origin, and write the coordinates of its vertices.

c) Draw \( \Delta A''B''C'' \), the image of \( \Delta A'B'C' \) under a reflection in the \( y \)-axis, and write the coordinates of its vertices.

d) Under what single transformation is \( \Delta A''B''C'' \) the image of \( \Delta ABC \)?

27. The vertices of \( \Delta MAT \) have coordinates \( M(1, 3) \), \( A(2, 2) \), and \( T(-2, 2) \).

a) Find \( \Delta M'A'T' \), the image of \( \Delta MAT \) under the composition \( r_{x-axis} \circ D_3 \).

b) Find \( \Delta M''A''T'' \), the image of \( \Delta MAT \) under the composition \( D_3 \circ r_{x-axis} \).

c) Are \( r_{x-axis} \circ D_3 \) and \( D_3 \circ r_{x-axis} \) equivalent transformations? Justify your answer.