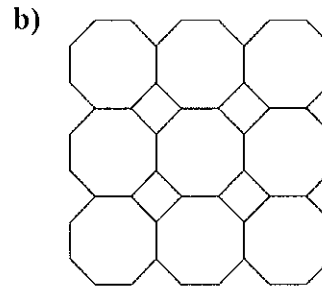
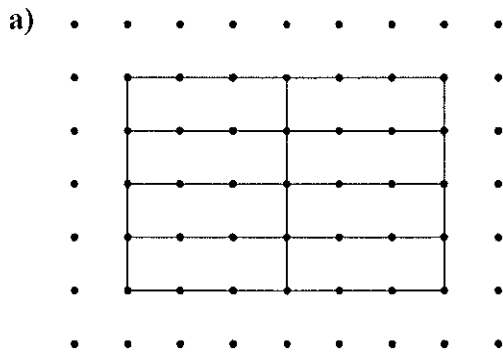


Symmetry Assignment

Name: _____

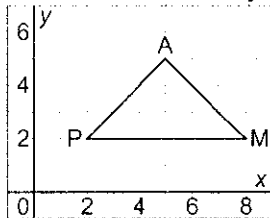
Reflections and Line Symmetry

1. Draw in the lines of symmetry in each design.

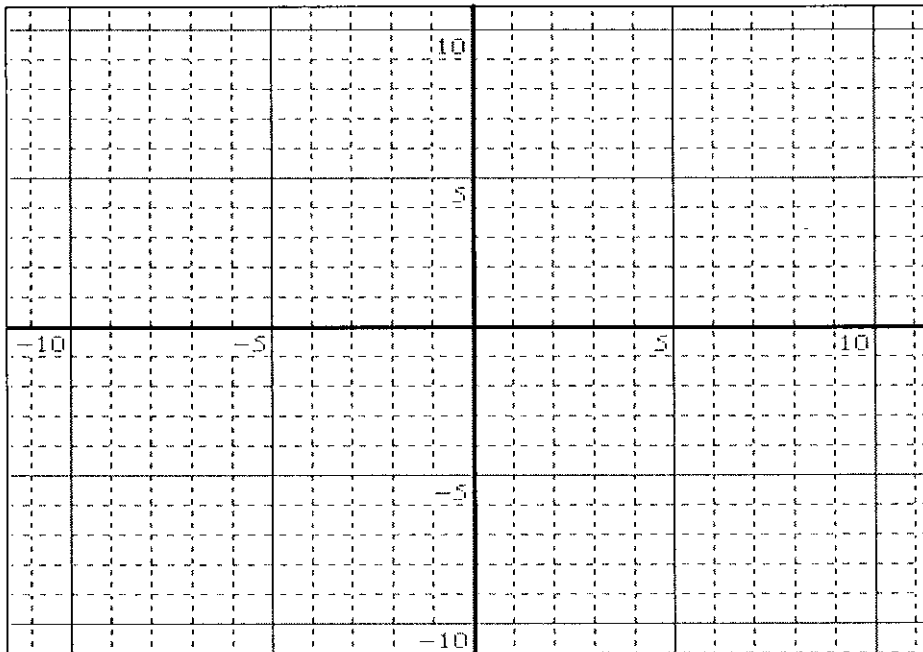


2. Draw the image of $\triangle PAM$ after each reflection below.

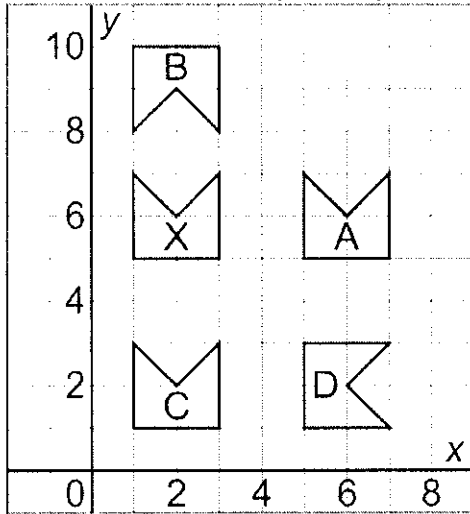
Write the coordinates of the larger shape formed by $\triangle PAM$ and its reflection images. Draw the lines of symmetry of the larger shape.



- Reflect $\triangle PAM$ in the horizontal line passing through 2 on the y -axis.
- Reflect $\triangle PAM$ in the vertical line passing through 5 on the x -axis.
- Reflect $\triangle PAM$ in the oblique line passing through the points (2, 2) and (5, 5).

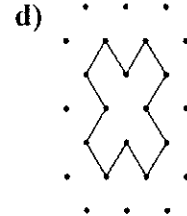
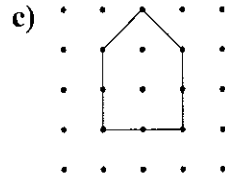
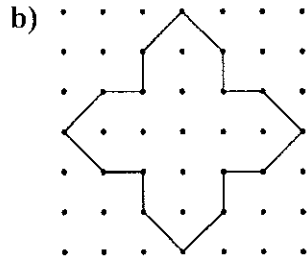
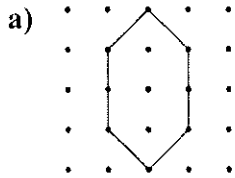


3. Identify the shapes that are related to the shape X by a line of reflection. Describe the line of symmetry in each case.



Reflections and Line Symmetry

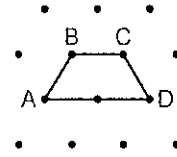
1. Which polygons have rotational symmetry? State the order of rotation and the angle of rotation symmetry for each.



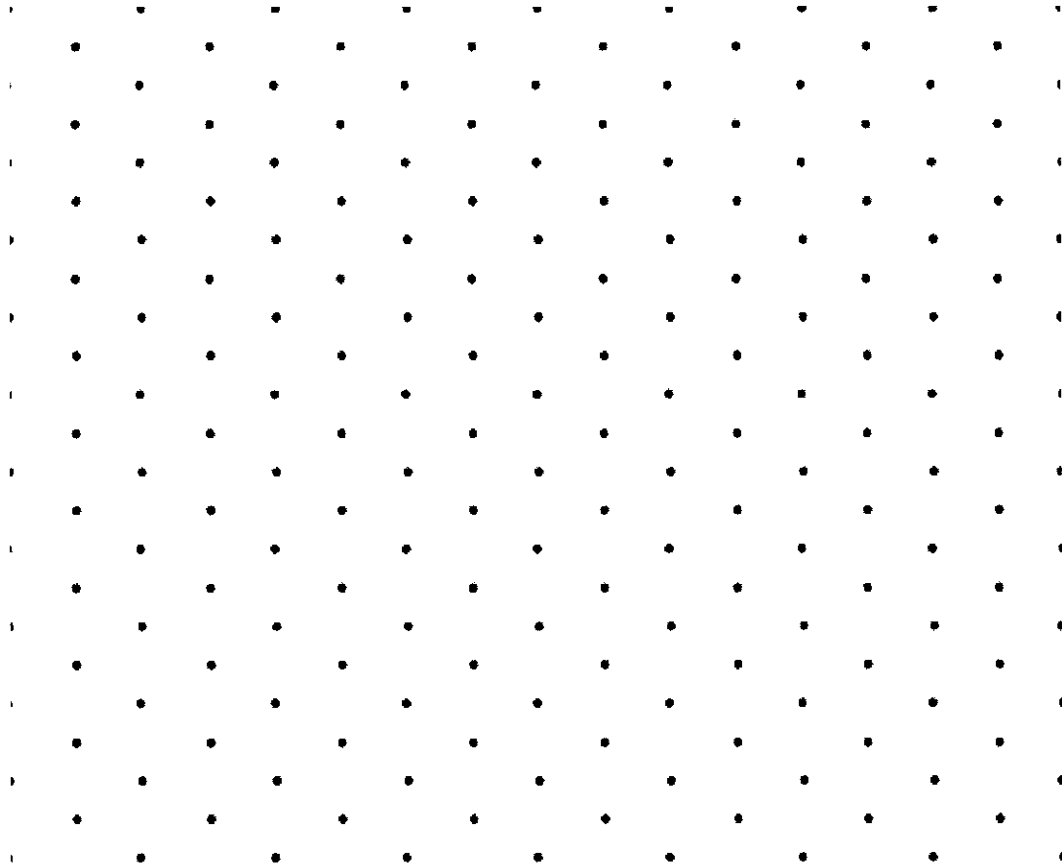
2. Draw the rotation image for each rotation of quadrilateral ABCD.

Rotate quadrilateral ABCD clockwise about vertex D by:

- a) 60° b) 120° c) 180°
 d) 240° e) 300°



Consider the larger shape formed by quadrilateral ABCD and these rotation images. Describe the symmetry of this shape.



3. What is the order of rotation and the angle of rotation symmetry, if any, for:

- a) an equilateral triangle b) a regular polygon with 9 sides
 c) a kite that is not a rhombus d) the plus sign +

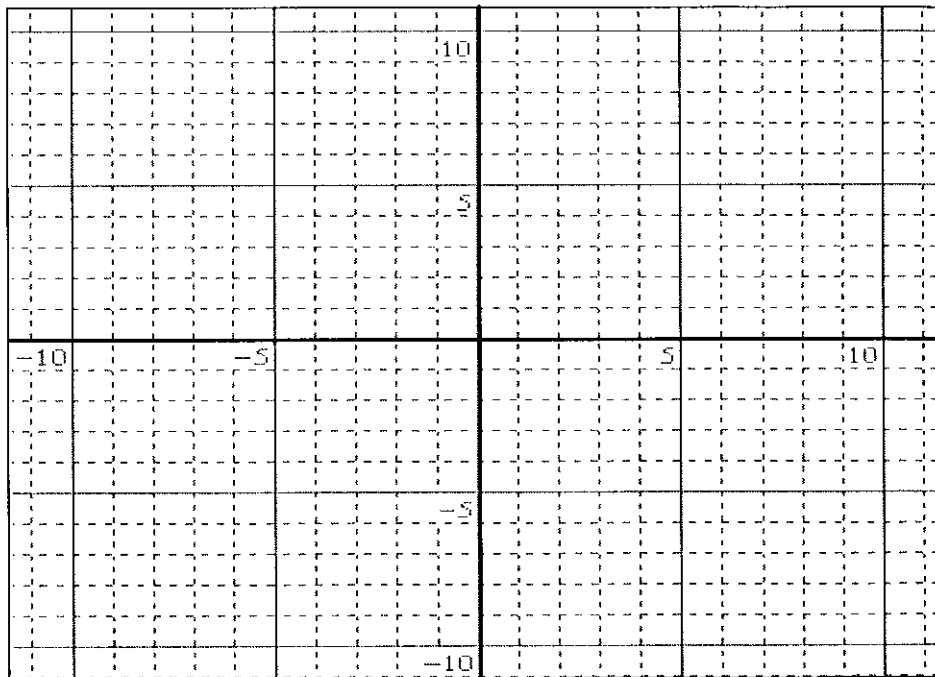
4. Plot the kite FISH on a coordinate grid.
 The vertices of FISH are F(3, 4), I(5, 2), S(3, 1), H(1, 2).
 Rotate the kite FISH:
 a) 90° clockwise about vertex F
 b) 180° about vertex F
 c) 270° clockwise about vertex F

Draw each rotation image.

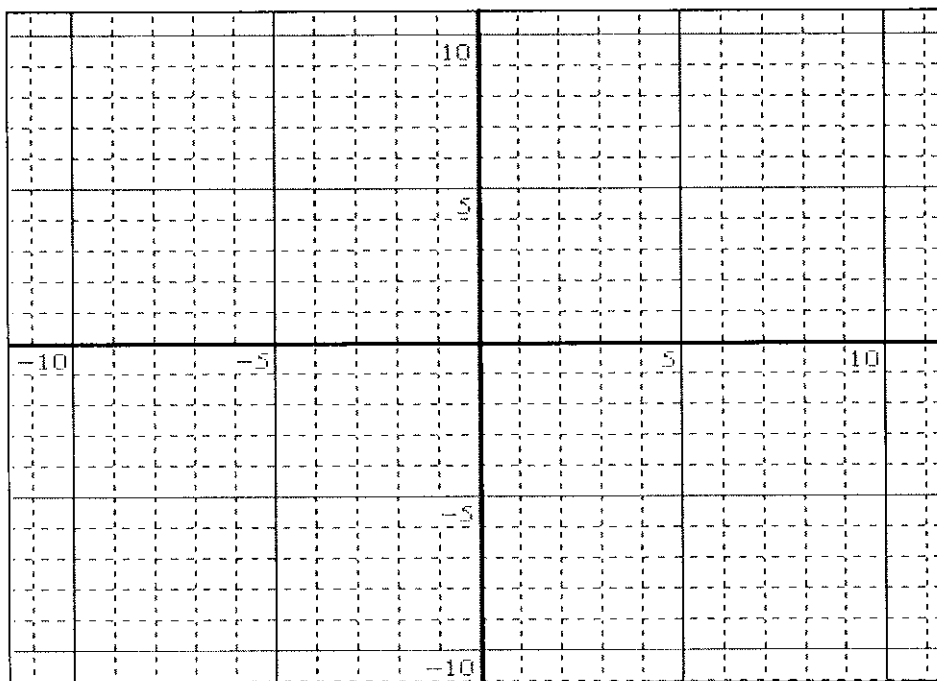
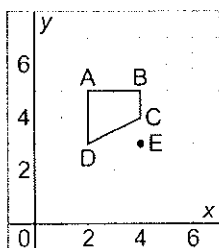
Look at the shape formed by the kite and its rotation images.

Write the coordinates of this shape.

Describe any rotational symmetry in this shape.

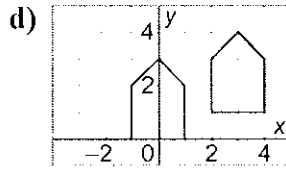
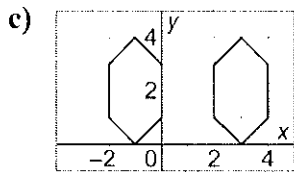
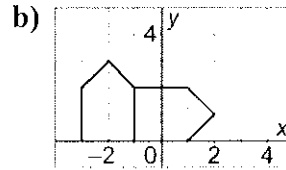
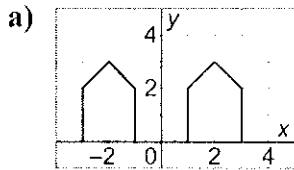


5. Draw the rotation image for each transformation of quadrilateral ABCD.
 a) 180° about vertex B
 b) 90° clockwise about vertex A
 c) 90° counterclockwise about point E



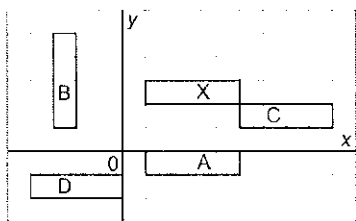
Identifying Types of Symmetry on the Cartesian Plane

1. For each pair of shapes, determine whether they are related by line symmetry, by rotational symmetry, by both line and rotational symmetry, or by neither. Describe the symmetry, if any.

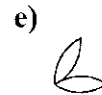
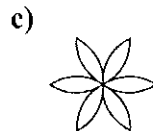
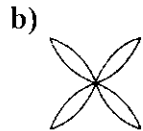
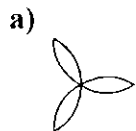


2. Which of the rectangles A, B, C, D is related to rectangle X:

- a) by rotational symmetry about the origin?
- b) by rotational symmetry about one of the vertices of rectangle X?
- c) by line symmetry?



3. Identify and describe the types of symmetry in the petal shapes.



4. Draw the image of quadrilateral WXYZ after each transformation. Write the coordinates of each shape formed by quadrilateral WXYZ and its image. Describe the symmetry in each of these shapes.

- reflection in the x -axis
- rotation 90° clockwise about the origin
- rotation 90° clockwise about the point $(1, 0)$
- translation 1 square right and 1 square down

