1. Determine for each of the following the smallest number of **faces** possible:
   a. Prism
   b. Pyramid
   c. Polyhedron

2. A certain polyhedron has 10 vertices and 18 edges. Could it be a prism? Explain. Could it be a pyramid? Explain.

3. Can a prism have exactly 33 edges? Explain how you know. Can a pyramid have exactly 33 edges? Explain how you know.

4. A certain polyhedron has 9 faces and 10 vertices. Could it be a prism? Explain. Could it be a pyramid? Explain.

5. Name by type (e.g., triangular prism) what kind of polyhedron would have the features described in each case. It is not possible to have the polyhedron described, explain why.
   a. A prism with 101 edges

   b. A prism with 101 vertices.

   c. A prism with 101 faces.

   d. A pyramid with 10 edges.

   e. A pyramid with 101 faces.

   f. A pyramid with 101 edges.

   g. A pyramid with 10 vertices.

6. Sketch the image of triangle *ABC* after a reflection across line *m* and label it *A'B'C'*.
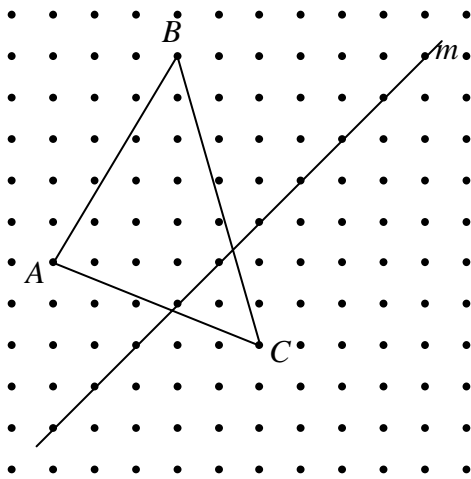
7. Identify which transformation (translation, reflection, or rotation) would change each polygon to the corresponding shaded image. For an answer of "reflection," sketch the line of reflection. For an answer of "rotation," indicate the approximate location of the center of rotation.

a.

b.

c.

d.
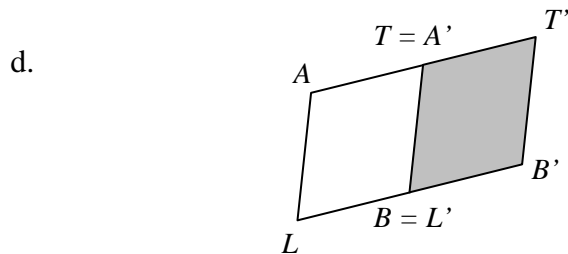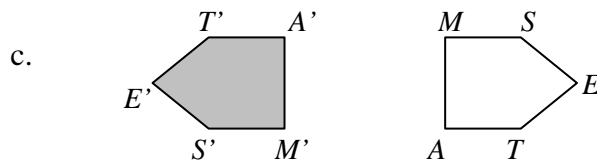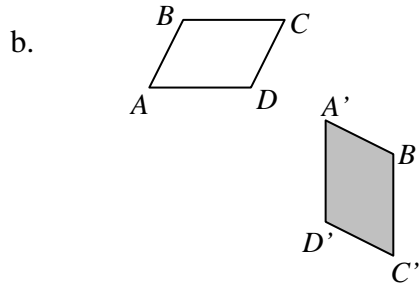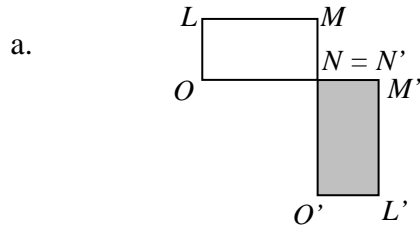
8. For each condition below, sketch a triangle that satisfies the condition. If it is not possible to sketch such a triangle, state briefly why it is not possible.
   a. It has no lines of symmetry.
   b. It has exactly one line of symmetry.
   c. It has exactly two lines of symmetry.
   d. It has exactly three lines of symmetry.

9. If possible, carefully sketch an example of each figure. If the figure described is not possible, briefly indicate why. Include in your sketches any lines of symmetry and indicate any angle(s) of rotational symmetry.
   a) A quadrilateral that has rotational symmetry but no reflection symmetry.
   b) A quadrilateral that has both rotational and reflection symmetry.

10. Identify all forms of symmetry shown in this design.
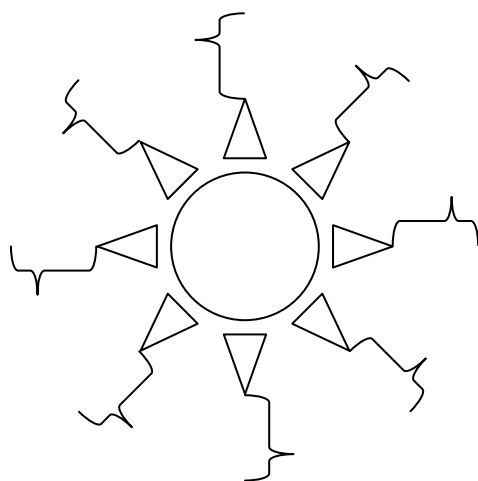
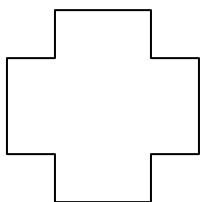11. What forms of symmetry are in a capital letter H?

H

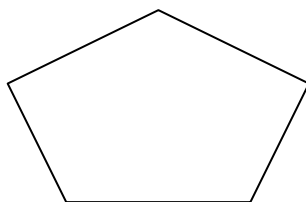12. What forms of symmetry are in a capital letter N?

N

13. Determine the types of symmetry that each figure has. Sketch the lines of symmetry if it has reflection symmetry; indicate the number and angles of rotation symmetries if it has rotation symmetry.
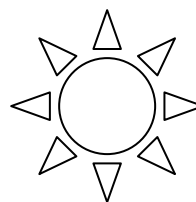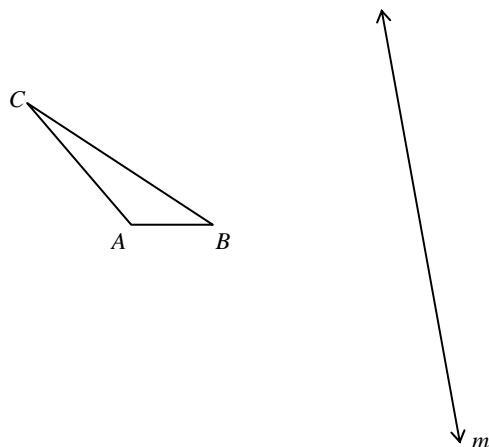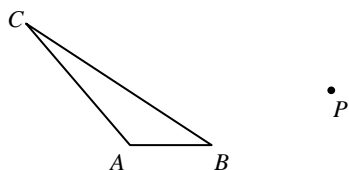
A.   B.   C.

14.Using a protractor and compass, sketch the image of triangle *ABC* after a reflection across line *m* and label it *A´B´C´*.

15. Using a protractor and compass, sketch the image of triangle *ABC* after a clockwise rotation of 75° about the point *P*. Label the image *A´B´C´*.

16. Complete the figure below so that it is symmetric about both dashed lines.