

Exploring Symmetry with Pattern Blocks

Activity 2. Combine several pattern blocks to design a shape that is symmetrical (mirror symmetry). Use a Mira if necessary to verify that your design is indeed symmetrical.

Activity 3. Construct a design that has point symmetry. Identify the center of symmetry. Trace your design on paper. Trace lines across the point of symmetry to identify points on your design that are symmetrical with respect to the center of symmetry.

Activity 4. Construct a design with pattern blocks that has point symmetry but does not have mirror symmetry.

Activity 5. Construct a design with pattern blocks that has both point symmetry and mirror symmetry.

Activity 6. Verify by rotating that a shape with point symmetry also has a rotational symmetry of 180° around the center of symmetry.

Activity 7. Verify with several shapes that the following two conditions are equivalent. That is, a shape that satisfies condition a) also satisfies condition b) and vice versa.

- a) A shape has point symmetry and one axis of mirror symmetry.
- b) A shape has two perpendicular axes of mirror symmetry.

Activity 8. Identify which of the pattern block pieces have point symmetry.

Activity 9. Verify that the square has rotational symmetry of 90° with respect to its center.

Activity 10. Construct a design that has rotational symmetry of 90° . Identify the center of rotation.

Activity 11. Construct a design with pattern blocks that has rotational symmetry of 90° but does not have mirror symmetry.

Activity 12. Construct a design with pattern blocks that has both rotational symmetry of 90° and has also mirror symmetry. Identify all the symmetry axes of your design.

Activity 13. *What are the rotational symmetries of the equilateral triangle?*

Activity 14. Identify the rotational symmetries of the regular hexagon.

Activity 15. *Are there any other pattern block pieces that have rotational symmetry of any kind?*