

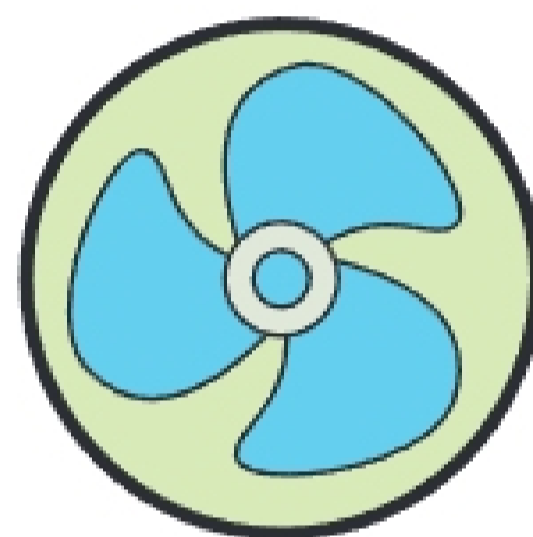
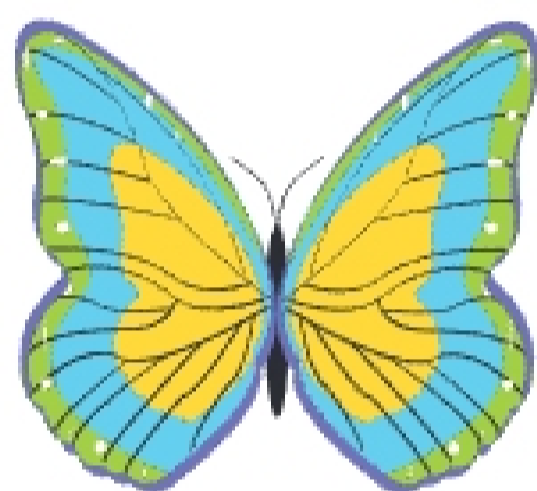
Investigation

1

Three Types of Symmetry

When part of a design is repeated to make a balanced pattern, we say the design has **symmetry**. Artists use symmetry to make designs that are pleasing to the eye. Architects use symmetry to produce a sense of balance in their buildings. Symmetry is also a feature of animals, plants, and mechanical objects.

The butterfly, fan, and ribbon below illustrate three kinds of symmetry.

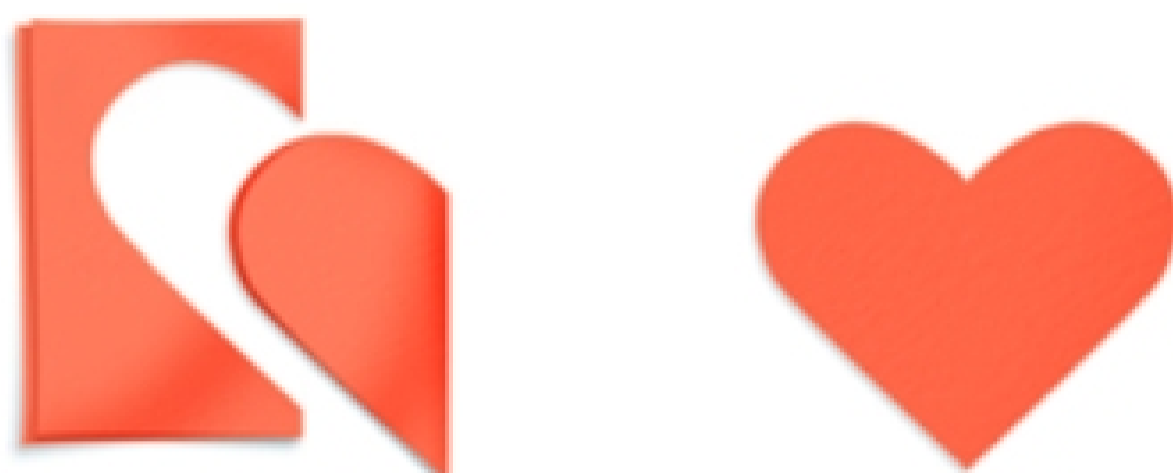


Getting Ready for Problem 1.1

- What part of each design is repeated to make a balanced pattern that allows us to say the three figures have symmetry?
- How do the figures suggest different kinds of symmetry?

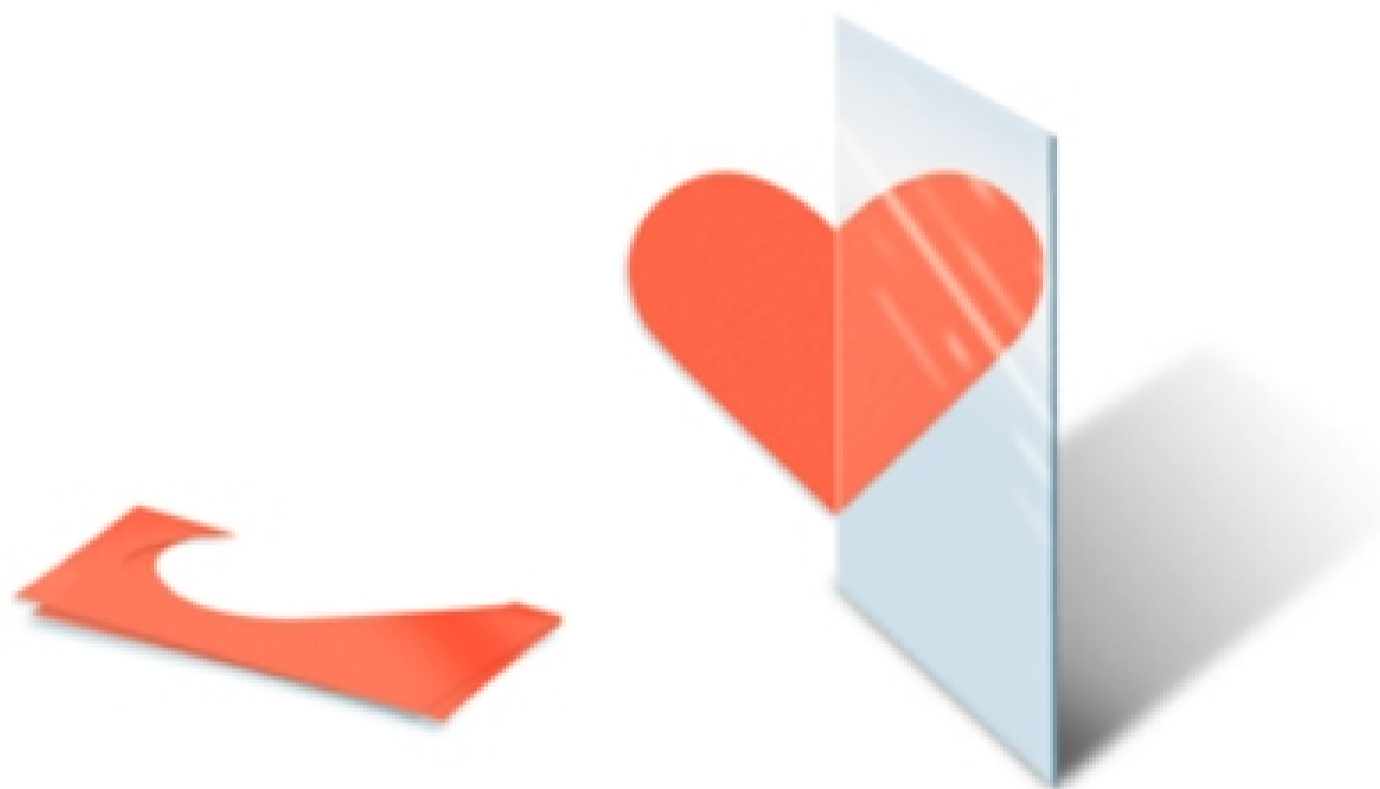
1.1 Reflection Symmetry

You have probably made simple heart shapes by folding and cutting paper as shown below.



The resulting heart shape has **reflection symmetry**, which is sometimes called *mirror symmetry* or *line symmetry*. The fold shows the **line of symmetry**. A line of symmetry divides a figure into halves that are mirror images.

If you place a mirror on a line of symmetry, you will see half of the figure reflected in the mirror. The combination of the half-figure and its reflection will have the same size and shape as the original figure. You can use a mirror to check a design for symmetry and to locate the line of symmetry.

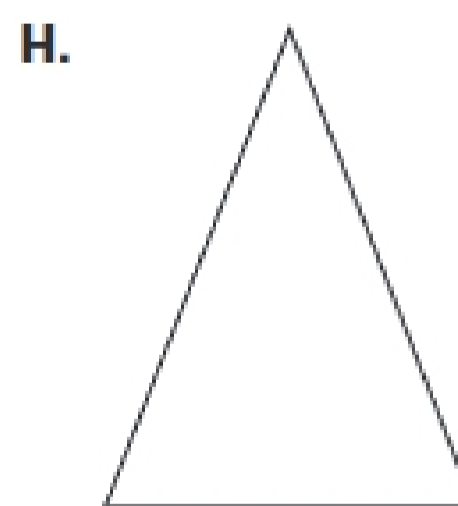
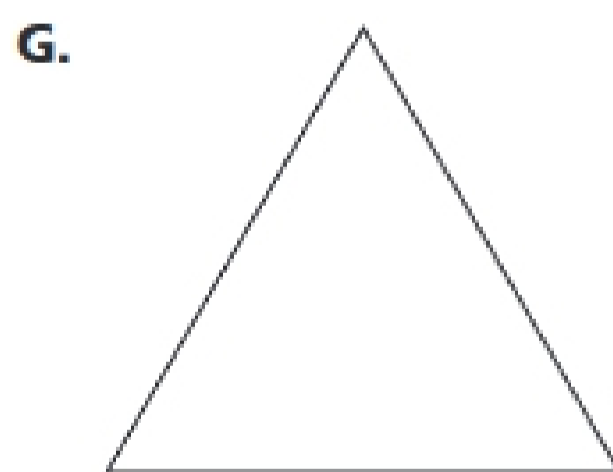
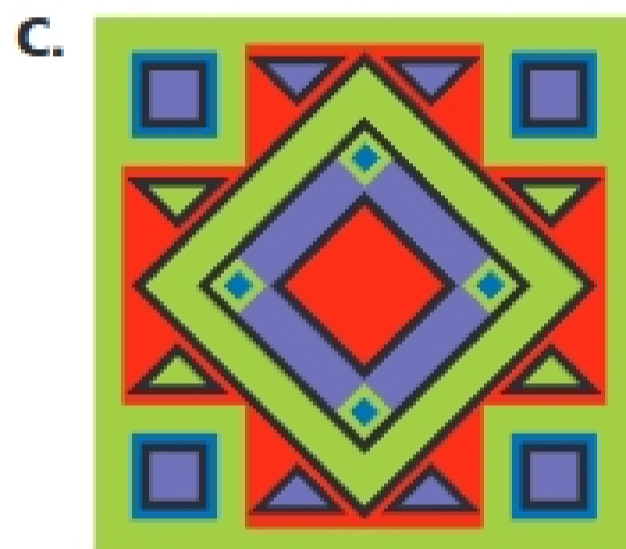
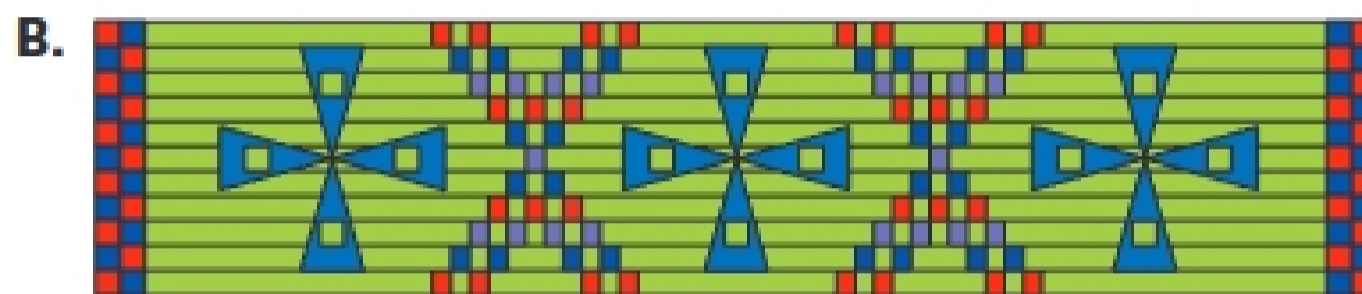
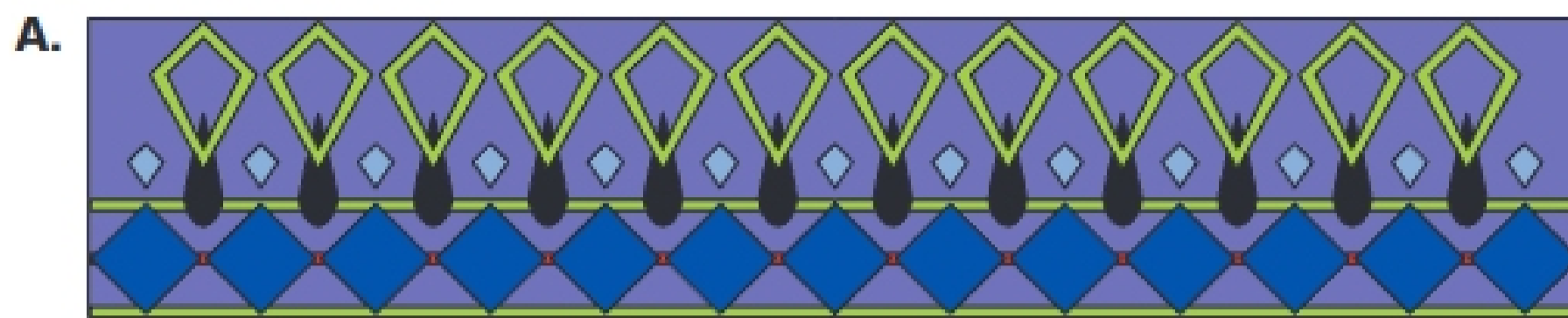


You can also use tracing paper to check for reflection symmetry. Trace the figure and the possible line of symmetry. Then reflect the tracing over the possible line of symmetry. If the reflected tracing fits exactly on the original figure, the figure has reflection symmetry.

What happens to the line of symmetry when you reflect the tracing and match it with the original figure? Does its location change?

Problem 1.1 Reflection Symmetry

Use a mirror, tracing paper, or other tools to find all lines of symmetry in each design or figure.



ACE Homework starts on page 15.