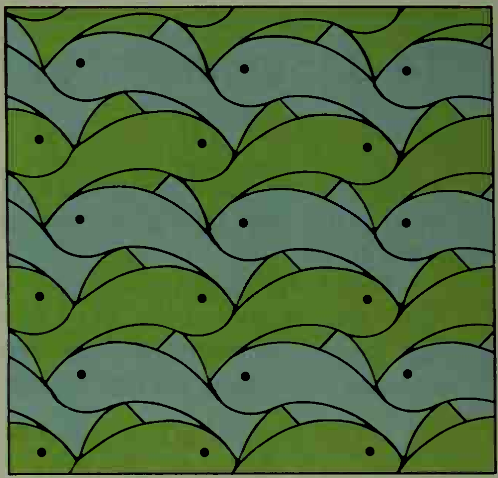
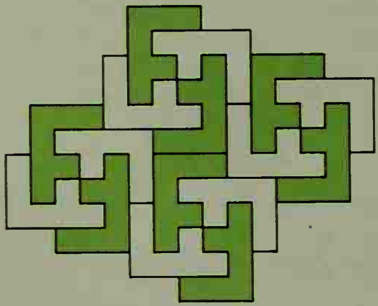
A figure can also have **translational symmetry** if there is a translation that maps the figure onto itself. For example, imagine that the design at the right extends in all directions to fill the plane. If you consider the distance between the eyes of adjacent blue fish as a unit, then a translation through one or more units right, left, up, or down maps the whole pattern onto itself. Do you see that you can also translate the pattern along diagonal lines?

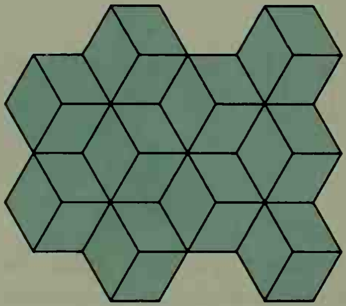


It is also possible to map the blue fish, which all face to the left, onto the right-facing green fish by translating the whole pattern a half unit up and then reflecting it in a vertical line. Thus, if we ignore color differences, the pattern has **glide reflection symmetry.**

A design like this pattern of fish, in which congruent copies of a figure completely fill the plane without overlapping, is called a *tessellation*. Tessellations can have any of the kinds of symmetry we have discussed. Here are two more examples.



A tessellation of the letter F. This pattern has point symmetry and translational symmetry.



This tessellation has line, point, rotational, translational, and glide reflection symmetry.

Coloring a tessellation often changes its symmetries. For example, if the green were removed from the tessellation of the letter F, the pattern would also have 90° and 270° rotational symmetry.

A figure in space has **plane symmetry** if there is a symmetry plane X such that reflection in the plane maps the figure onto itself. (See Exercise 17, page 580.) Most living creatures have a single plane of symmetry. Such symmetry is called *bilateral symmetry*. The photographs on the next page illustrate bilateral symmetry.