

Lesson Logistics

Learning Outcomes

Elementary

Grades 5-6
Geometric Properties
Geometry and Spatial Sense
Measurement Relationships

Secondary

Grades 7-8
Geometric Properties
Geometric Relationships

Class Organization

Students will work individually.

Ensure that there are enough scissors and templates for the class.

The use of the *Student Handout* is optional, but helpful.

Further Exploration

Before the Activity

Discuss simple polygonal shapes (**Figure 1**), such as triangles, squares, and pentagons. Do they have lines of symmetry? Encourage the students to fold a piece of paper with a square drawn on it, in such a way that the four edges of the square lie on top of each other and the square can be cut out using only one cut. The easiest solution is to fold the piece of paper along the square's diagonal line of symmetry and then fold again along the other diagonal line of symmetry. Next, cut along the one remaining side to reveal the square. Remember, since the square is highly symmetric, there is more than one correct approach.

See the supporting documents (*Shapes* section) for the fold lines of the other shapes and try them out with the class. The students should start to notice that each angle in a shape is bisected (cut in half) and the paper has to be folded along the bisector line. Other fold lines may be present, depending on the difficulty of the shape.



Figure 1



a WOW Lab

BLUEPRINT

One Cut - Lesson Logistics

After the Activity

After the students have tried folding and cutting different letters using templates (found in the *Letters* section), they can attempt drawing and cutting out their own shapes. The students can also draw the letters of the alphabet and attempt to fold and cut them out without looking at the templates for the fold lines. To help guide the process, have the students measure each angle and calculate the angle bisector, which will then be the fold line.