

Möbius Strip Activity

by David Pleacher

The Möbius strip can be used as an attention-getter at the beginning or end of a class period (the day before a vacation is often a good time to use it). It can be used in geometry class when you are teaching Euler's Formula ($V-E+F=2$) when you are counting the number of vertices, edges, and faces of three-dimensional figures.

You will need the following items for this activity:

- (1) roll of adding machine tape
- (2) a pair of scissors
- (3) transparent tape
- (4) a pencil or marker (not pictured)



I use the following activities:

- (1) Make a Möbius strip.

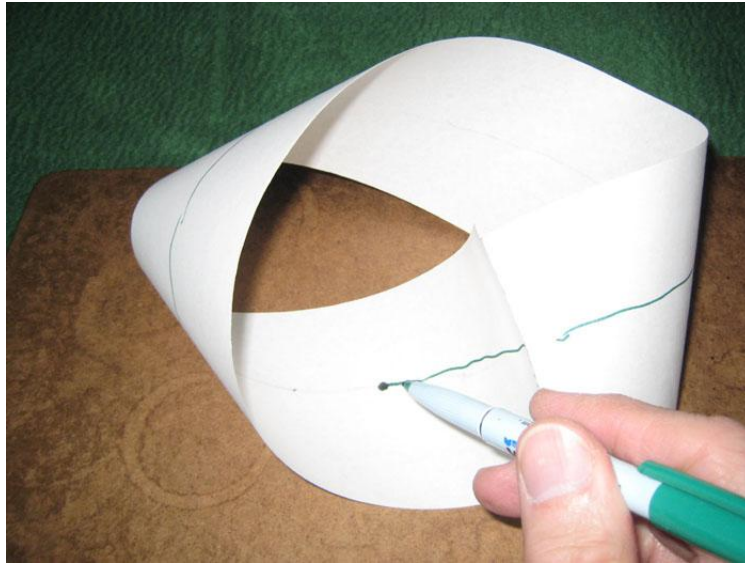
Take a strip of adding machine tape, give it a half-twist, and tape it together.



(2) Show its one-sidedness by tracing with a pencil or marker.

Hold the Möbius strip flat on a table or desk or blackboard. Then take a marker and draw a line down the middle of the strip until you get back to your starting point.

You will find that you have drawn on both sides of the paper without crossing over an edge!

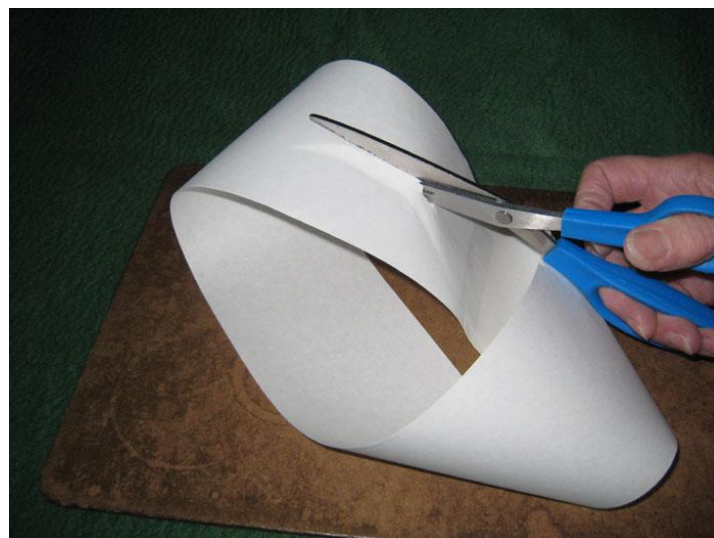


(3) Show it has only one edge by holding the Möbius strip with one hand and tracing along the edge.

Make a mark on one point of the edge. Now start at the mark and trace along the edge with your finger. You will find that you get to the opposite point on the edge before you get back to the starting point.

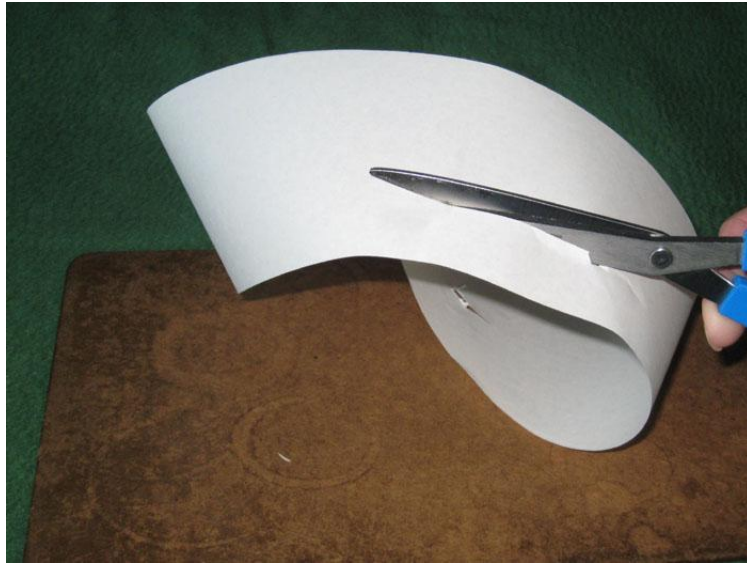
(4) Cut the Möbius strip down the center.

Cut down the middle of the strip. Instead of getting two separate strips, the Möbius strip becomes one long strip! Before finishing the cut, I always ask my students to predict what they think will happen.



(5) Make another Möbius strip and cut it one-third of the way from the edge.

Again, have the students predict what will happen. You must cut around the strip two complete times until you get back to the starting point. You will now have two loops.

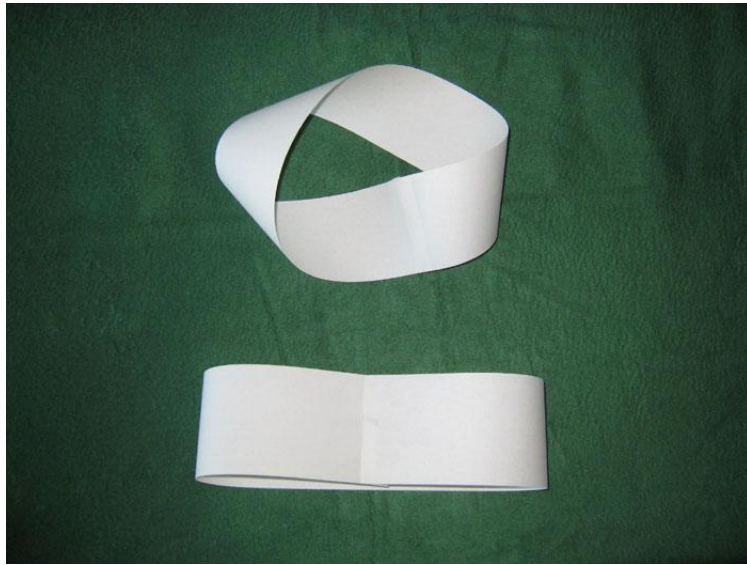


(6) This last activity is my favorite – it was shown to me by Fred Pence of Spotswood High School.

First, take two strips of equal length.



Then make one ordinary strip (no twist) and one Möbius strip.



Then tape them together at right angles.



Then cut down the middle of each strip. I try to keep as much of the strips in my hand as possible to hide what is happening. You will get a square!

