**Möbius Strips**

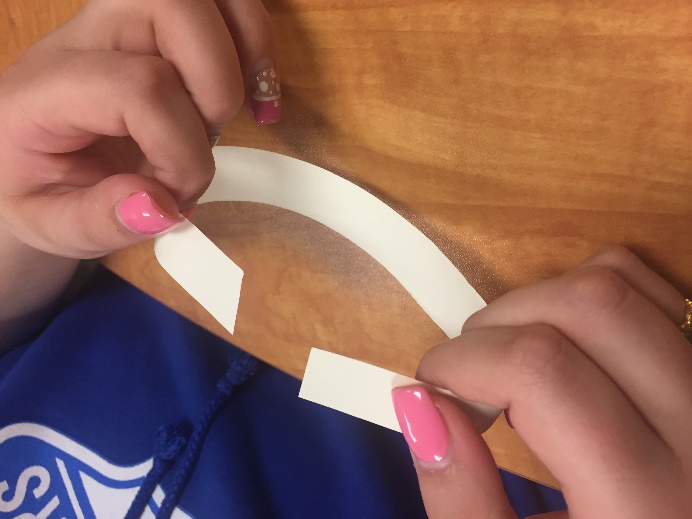
Goal: -The students will learn about the characteristics of a Möbius Strip. -The students will discover relationships between the number of twists in the strip and the number of edges and sides present.

Objective: -Given a strip of paper and tape, the student will create a Möbius Strip. -Using the Möbius Strip they created, the student will determine the number of edges and sides of the Möbius Strip. -Using information from some trials on the data chart, the students will predict a relationship between the number of twists in the strip and the number of edges and sides that it has. -Using strips of paper, tape, and a chart, the student will state the relationship between the number of twists in the strip and the number of edges and sides that it has.

Materials: -Multiple strips of paper -Tape -Data Chart

**Creating a Möbius Strip**

To create the Möbius strip, take a strip of paper and pull the two ends together. Before taping them together, take one end and twist it 180˚. Then, secure the ends together with tape. You now have created a Möbius Strip.



The Möbius Strip is named after August Ferdinand Möbius, a nineteenth century German mathematician and astronomer who was a pioneer in the field of topology. The design of the Möbius Strip has practical applications in industry. The design has been used for conveyor belts and continuous-loop recording tapes. You’ll find out why these design work best after you complete this activity!

**What Makes This a Möbius Strip?**

Take a pencil and place it in the center of the strip. Draw a straight line around the strip until you reach where you started without lifting the pencil. What do you notice? What do you think this shows about the Möbius Strip?

**\*Characteristic #1 of a Möbius Strip: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\***

Now take a highlighter/marker a place it on an edge of the strip. Color along the edge until you reach where you started without lifting the highlighter/marker. What do you notice? What do you think this shows about the Möbius Strip?

**\*Characteristic #2 of a Möbius Strip: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\***

**Can We Find Patterns?**

Using the information we just found fill in the data chart for the number of sides and edges for a Möbius Strip (1- 180 twist). Using the other strips, complete the same process as above with each number of 180 twists. Determine the number of sides and edges for each and fill out the data chart.

Do you see any patterns? What are they?