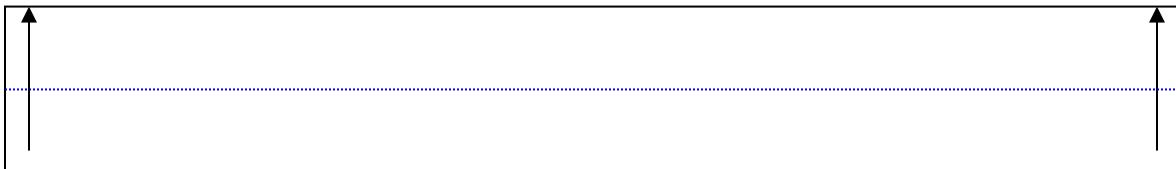


Math Circles - Ribbons and Bubbles

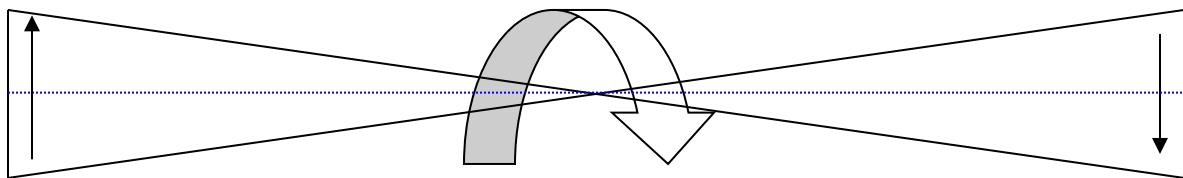
Ribbon Activity:

Take four ribbons. Draw an arrow at each end of the ribbons. Use your ruler to draw a center line down the middle of the ribbon.

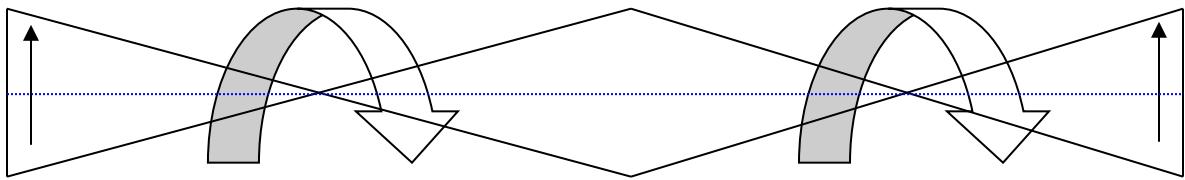
1. Tape the ends together with the two arrows pointing up. Cut along the center line. What do you get?



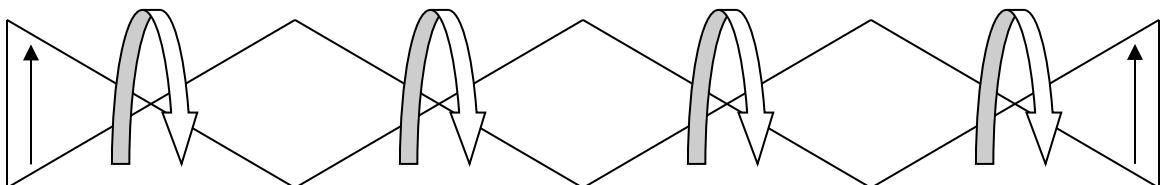
2. Take another ribbon. Hold it on one end, and twist the end until the arrow is pointing in the opposite direction—This is called a half-twist. Tape the ends together and cut along the center line. What do you get?



3. Take another ribbon. This time make one full twist. Tape the two ends together and cut along the center line. What do you get?



Homework: Repeat these activities at home. In a fourth ribbon try making two full twists. Tape the ends and cut along the center line. What do you observe?

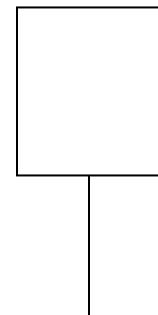
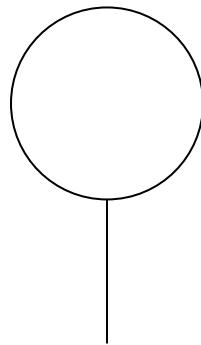




Bubble Activity

Different shapes of wands:

What type of bubbles are you going to get using a circular wand?



How about the rectangular wand?

What if the wand is tied into a knot?