

Trinity Sunday:

Date: 7th June, 2009

Readings: John 3: 1-17;
Psalm 29

1. Exploring the nature of God

Möbius Strip

You'll need:

- ♦ a long strip of paper per Möbius strip
- ♦ glue/sticky tape
- ♦ pen/pencil
- ♦ scissors

As you do this, I wonder how the Möbius strip might remind us of God...

Method:

- ♦ Take a strip of paper and some sticky tape. Turn the paper into a loop, but before you stick it down, flip one end of the paper over. This should give you a piece of paper with a half-twist in it (Diagram 1). You have made a **Möbius strip**.
- ♦ The Möbius strip has only got one side. Run the pen/pencil along the centre of the strip (Diagram 2). You will notice that the line is on the outside *and* the inside of the strip without taking the pen off the paper.
- ♦ Cut the strip along the pen line you have made down the middle. Instead of getting two separate strips, the Möbius strip becomes one long strip. (To start the cut off, fold the strip and make a small cut, then unfold the strip and use the hole as a starting point.)
- ♦ Cut along the middle of the new long strip and see what happens.

Try this:

- ♦ Take two ordinary, untwisted loops. Stick them together at right angles to each other.
- ♦ Now do the same with an ordinary strip and a Möbius strip.
- ♦ With each set of strips, if you cut down the middle of both strips, you will get a square.
- ♦ How did two different shapes both end up making a square?
- ♦ Try doing it again, but this time colour in one side of the untwisted strip in both sets.
- ♦ Can you see a difference in the squares now?

Diagram 1

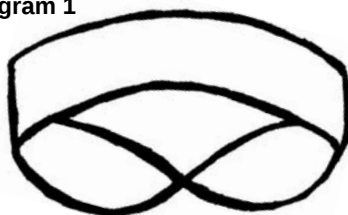


Diagram 2

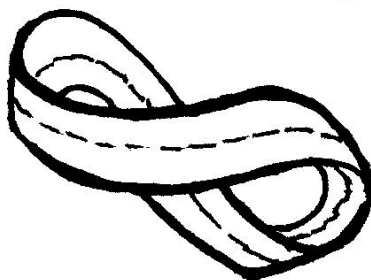


Diagram 3a:
Hold the loop vertically, twist the top end to the left, then stick in place.

Diagram 3a:
Hold the loop vertically, twist the top end to the right, then stick in place.

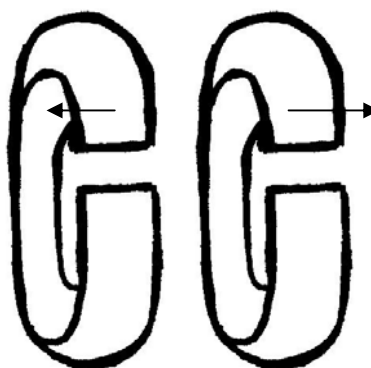
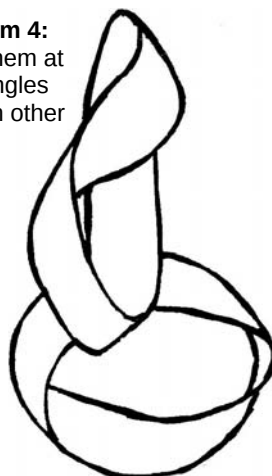


Diagram 4:
Stick them at right angles to each other



Here are some more things to try:

Double Twist

Just like making a Möbius Strip, but this time flip the strip twice before sticking it down. This will give you a strip with two half-twists in it. When you cut down the middle of the strip it will split into two linked rings.

Triple Twist

Make a strip with three half-twists. When you cut down the middle, the strip will become a knotted loop.

Hearts

- Make two Möbius strips. Use a different coloured paper for each strip. One strip has to be twisted clockwise, the other anticlockwise (Diagram 3a & 3b).
- Stick them at right angles to each other (Diagram 4).
- When you cut down the middle of both strips, you will get a pair of hearts linked together.
- If your strips are not linked you didn't have the strips twisted in opposite directions. Check the diagram to see how to do it.

WEBSITE REFERENCES:

http://mathssquad.questacon.edu.au/mobius_strip.html

<http://www.davidparker.com/janine/mathpage/topology.html>

<http://www.csiro.au/resources/MoebiusStrip.html>

<http://pbskids.org/zoom/activities/phenom/mobiusstrip.html?print>

http://stargazers.gsfc.nasa.gov/pdf/activities/math_activities/math_teacher/math_act_11_t.pdf

<http://www.math.unh.edu/cgi-bin/generatePage.cgi?moebius>

<http://isaac.exploratorium.edu/~pauld/activities/mobius/mobius.html>

Developed from an activity first published in
KUCA NEWS Winter 2004 page 27

This activity has been produced by KUCA News in the SA Synod of the Uniting Church in Australia and is available free of charge. This material may be freely used in worship and related activities in churches, schools, kids' clubs etc. provided no fee is charged and KUCA News is acknowledged as the source.