1 The Mobius Strip

1. Take the 2 ends of the strip, twist it once, and tape the 2 sides together. How many sides does the Mobius Strip have? Hint: try tracing the side of the Mobius Strip with your pencil to see where you end up.

   Only 1!

2. What do you predict you will get after you cut the Mobius Strip in half?

   You should get another mobius strip that is twice as long.

3. Now, cut the Mobius Strip in half. What actually happened? Discuss why this might have happened.

   See above answer.

4. Now, instead of cutting the Mobius Strip in half, try cutting it into thirds. What happened this time?

   You should get two loops that are linked together.

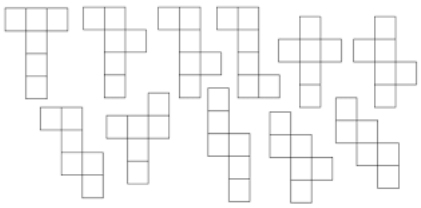
5. Now, instead of making a mobius strip with 1 twist before taping it, twist it twice and then tape it. Then, cut it in half. What happened this time?

   You should get a very interesting shape, one that looks similar to the original mobius strip, but it is not exactly the same...

2 Nets

1. Below is an example of a net of a cube. How many different nets does a cube have?

   A cube has 11 nets. They are shown below



2. Can you create a net for a pyramid? A cone? A cylinder? Draw these on another sheet of paper.

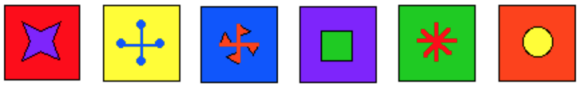
3. How many different nets does a triangular pyramid (tetrahedron) have?

   A tetrahedron has only 2 nets.

4. Challenge: Suppose you have a cube of side length 3. You cut off one inch from each corner, leaving behind a new figure. How many sides does this new figure have? Can you think of a name for it?

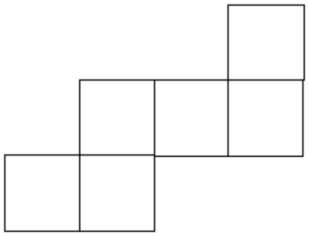
   This is called a truncated cube. It has 24 sides, 6 octagonal faces, and 8 triangular faces.

5. Here are the six faces of a cube. They are in no particular order.



   Here are three views of the cube, from different angles.

Can you figure out where the faces are in relation to each other and map them on this net of the cube?



Answers will vary; one possible solution is displayed below.