Notes to the volunteer:

This module provides an opportunity for kids to play with topology ideas in an informal way.

The Topology Tricks display should have the following materials available:

1. A lump of clay or playdough.
2. A couple of pieces of rope for tying knots.
3. A collection of knots to sort.
5. Tape, scissors, and pencils.
6. A hairy ball and a hairy doughnut.
7. A cloth doughnut and a cloth ball, with a slit in it for turning inside out.

Answers and suggestions for the activities:

1. An option for a shape which is topologically different from the pictures is a doughnut with two holes.
2. You need to untie the knot in the rope when each child is finished with it, or ask the child to do it.
3. The doughnut can't be turned right-side-out. You need to put both the ball and the doughnut back to the starting point when the child is finished with them (that's inside out).
4. The kids should discover that they can make the hairs lie smoothly on the doughnut. That's not true with the ball--there will be at least one spot where all the hairs leave and another where they all meet.
5. Children will be likely to need help in tying the sailing knots. The instructions are included in the printable material.
6. Knot sorting answers for matching the sailing knots to the knots in the Knot Catalogue:
   The overhand knot is the first knot on the left in the top row.
   The figure eight knot is the second knot in the top row.
   Counting from the left, the bowline is the third from the left in the second row.
   The square knot is the combination knot at the bottom of the page.
7. Making the Moebius band--you may need to help children understand putting one twist in and taping ends.

8. Cutting the Moebius band--children may want to cut across the Moebius band. They need to cut in the long direction all the way around the Moebius band. You need to try this trick yourself--the results are really unexpected! After the first cut you should have a long loop with two twists in it. After you cut down the middle along the length of the strip a second time you should have two linked loops. You might want to get the kids to predict what will happen with each stage of the cutting.