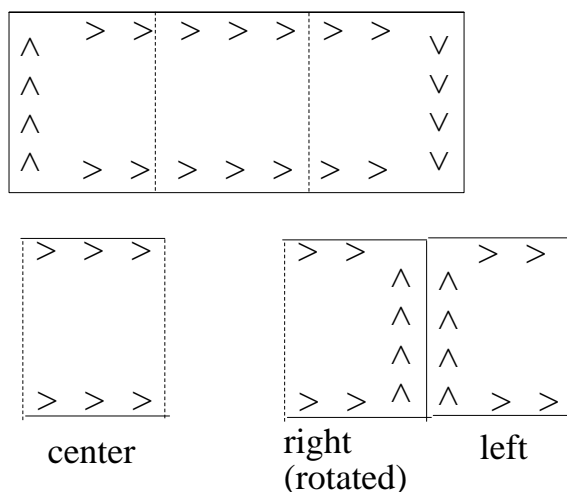


MCS-115

Answers to Homework: 5.2

- 5.2.8 There are two edges and two sides before cutting. The cutting process will cut each side in half, for a total of four sides, and create two additional edges. This is consistent with two strips of paper with two edges each. Before cutting you can see that the two edges form two linked circles. So after cutting, the two strips will still be linked. Additionally, the two strips also have two half twists.
- 5.2.9 This is exactly the same as in the previous question. You get a thin and a thick copy of the original strip linked together.
- 5.2.22 It still has only one side, but it has two edges.
- 5.2.24 By rotating the Klein bottle, the liquid will go up and around the thin part and come out.
- 5.2.32 The two cuts separate the Klein bottle into two cylindrical pieces. Consider cutting the edge identification diagram *before* pasting the edges together. Nevertheless, it is good practice to visualize where the cuts are located on the Klein bottle.



- 5.2.36 The pictures are equivalent. Slide one end of the tube around the band as shown.

