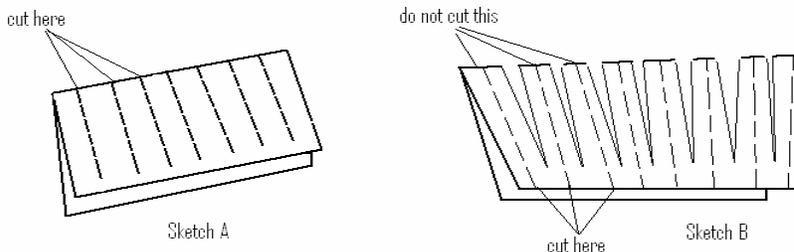


## WALK THROUGH A HOLE IN ORDINARY NOTEBOOK PAPER

**A. Question:** *Can something be changed physically but not changed chemically?*



**B. Materials Needed:**

1. One sheet of ordinary notebook paper
2. A pair of large, sharp scissors

**C: Procedure:**

1. Tell the students that you are going to cut a hole in the ordinary piece of paper, and that you are going to walk through the hole without tearing the paper!
2. Fold the paper in half, then make a series of straight cuts from the folded side, about 2cm apart stopping about 1cm from the edge of the opposite side.
3. Turn the paper around and make cuts from the other side, and also stop about 1cm from the edge of the opposite side.
4. Except for the first and last strip at each end, now snip off the folded ends of the strips.
5. Then carefully open up the paper without tearing anything and walk through the hole.

**D: Anticipated Results:**

The students will see that the paper has changed and they will see you walk through it.

**E: Thought Questions for Class Discussion:**

1. Do you think you could ride a bicycle through the hole?
2. We've changed the paper by cutting it; was it a physical or chemical change that the paper underwent?
3. Did we change any of the chemical properties of the paper?
4. What is the difference between a physical change and a chemical change in a sample of matter?
5. What are some other ways that you could make a physical change in this piece of paper?
6. What are some ways that you could make a chemical change in the paper?

**F: Explanation:**

Of course, the change that we made in the paper was a physical one. No chemical properties of the paper were changed, before or after the change. When a chemical change is occurring in a sample of matter, the chemical properties in the products after the change are completely different from those before the change. To make a chemical change in the paper, it could be burned or placed in sulfuric acid. The products of the burning process of paper would be CO<sub>2</sub> (carbon dioxide) which is a gas, plus water vapor and carbon. All three products have totally different properties compared to those of paper (the sample of matter before the change).