The movement of molecules in or out of cells: A guided inquiry (adapted from Lawson 1995).

Introduction: A scientist puts a drop of blood on a microscope slide and then studies it with a microscope. She notices that the red blood cells look like little disks. She then decides to add a few drops of salt water to the blood on the slide. After doing so, she notices that the red blood cells appear to shrink. (**Safety note:** Blood should not be collected, typed, tested, or otherwise used in the classroom.)

This observation leads to a question that you will need to investigate: Why do the red blood cells appear to shrink when salt water is added? Here are two hypotheses:

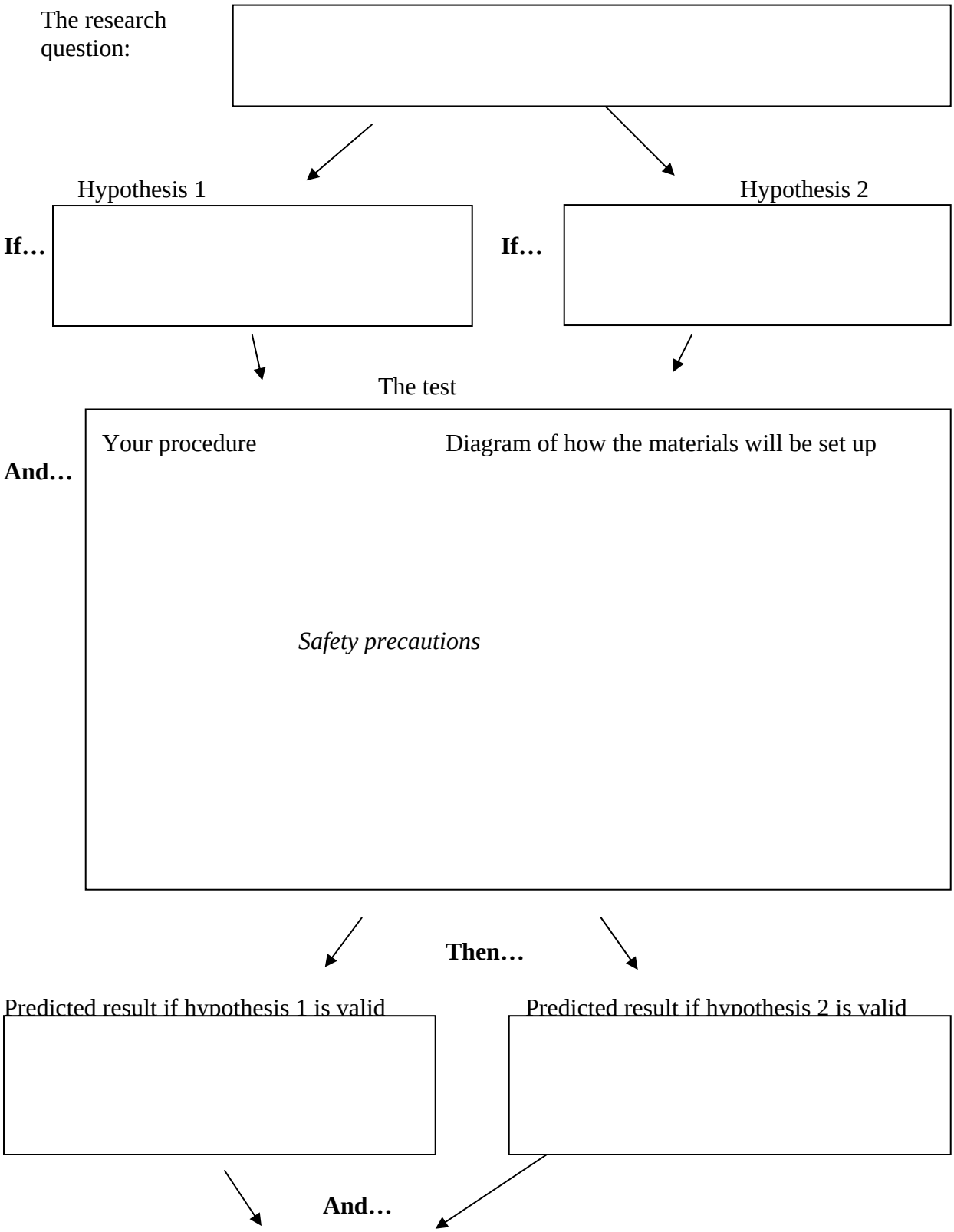
1. The salt pushes on the cell membranes and makes the cells look smaller.
2. Water molecules move out of the cell because the concentration of water is greater inside the cell than outside the cell.

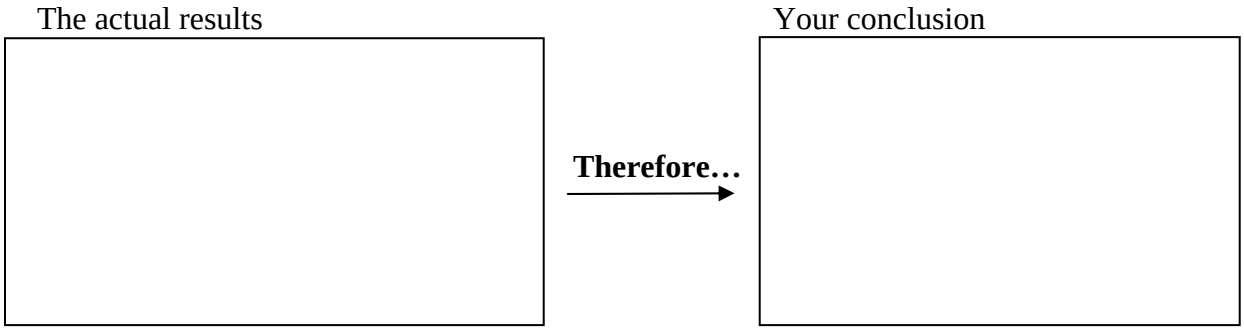
Materials: Use the following materials to test these two hypotheses:

- salt water
- an electronic balance
- dialysis tubing (assume that it behaves just like the membranes of red blood cells)

Getting started: You can construct a model cell with the dialysis tubing. To do this, soak a piece of dialysis tubing in water and then tie a knot in one end. Rub the other end of the tubing between your fingers to separate the sides. You can then fill the dialysis tubing with any type of liquid, such as salt water or distilled water. Once filled, tie the other end of the dialysis tubing. You now have a model cell. You can then dry the outside of the bag, weigh it, and place it into a beaker filled with any type of liquid, such as salt water or distilled water.

The investigation proposal (adapted from Lawson 1995).




The actual results
Therefore…
Your conclusion