Name: _____

WHICH WAY'S NORTH?

In "Flying Toward Home" (p. 20), you learned that pigeons can use Earth's magnetic field to find their way home. Scientists have discovered that cells in their brains respond to the magnetic field. Humans can't sense magnetism this way, so we use instruments to measure it. Try this hands-on activity to create a compass that can detect Earth's magnetic field.

PREDICT:

How could you make a compass to detect Earth's magnetic field?

MATERIALS:

plastic bowl • water • sewing needle • bar magnet • paper clip • piece of flat Styrofoam (such as one from a supermarket produce package), 2.5 cm x 2.5 cm (1 in. x 1 in.) • tape • marker

PROCEDURE:

1. Fill the plastic bowl halfway with water.
2. Magnetize your sewing needle: Hold the needle by its eye end. Rub the magnet along the needle from its eye toward its point. Do this about 100 times.
3. Check that the needle is magnetized: Hold the point of the needle to the paper clip. If the needle doesn't lift the clip, repeat Step 2 until it does.
4. Lay the magnetized needle flat on the piece of Styrofoam. Tape the needle in place.
5. Gently place the Styrofoam, needle side up, on the surface of the water in the bowl.
6. Your teacher will tell you which direction is north (or use a landmark that you know to be northward as a reference). Observe which end of your needle points north.
7. Remove the needle and Styrofoam from the water. Use a marker to write "North" on the end of the Styrofoam that pointed in that direction. Label the opposite side "South."
8. Gently return the needle and Styrofoam to the water's surface.
9. Gently nudge the Styrofoam so the needle points in a different direction. Observe what happens.
10. Take the bar magnet and slowly move it close to the needle. Observe what happens.

CONCLUSIONS:

1. In which direction did each end of the needle point?

2. How did placing a magnet near your compass affect its ability to detect North?

3. Would your compass still work if you were to use a wooden toothpick instead of a needle? Why or why not?