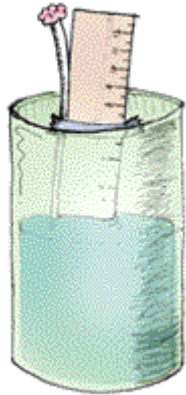


Pre-activity #2 – Make Your Own Barometer and Hygrometer

I. How to make a BAROMETER (adopted from The Franklin Institute)



Materials: glass beaker with lines
ruler
tape
one foot of clear plastic tubing
one stick of chewing gum
water

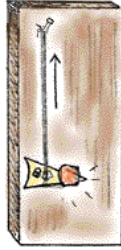
Procedure:

1. Stand a ruler in the glass beaker and hold it against the side.
2. Tape the ruler to the inside of the glass.
3. Stand the plastic tube against the ruler in the glass a half an inch from the bottom of the beaker.
4. Tape the tube to the ruler.
5. Fill the beaker about halfway with water.
6. Chew the stick of gum until it is soft.
7. Use the plastic tube like a straw and draw some water half way up the tube.
8. Use your tongue to trap the water in the tube.
9. Quickly move the gum to the top of the tube to seal it.
10. Make a mark on the ruler to record the water level in the tube.
11. Each time you notice a change in the water level make another mark.

The water in the tube rises and falls because of air pressure exerted on the water in the beaker. As the air presses down (an increase in atmospheric pressure) on the water, the more water that is pushed into the tube-causing the water level to rise. When the air pressure decreases, some of the water will move out of the tube, causing the water level to fall.

The change in barometric pressure will help you to forecast the weather. Decreasing air pressure often indicates the approach of a low pressure area, which brings clouds and precipitation. Increasing air pressure means that a high pressure area is approaching bringing fair weather.

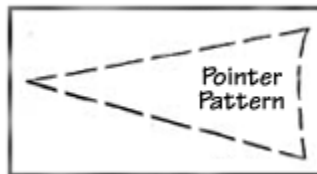
II. How to make a HYGROMETER (adopted from the Franklin Institute)



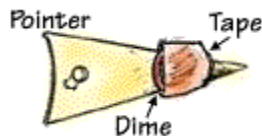
- Materials:**
- scrap piece of wood or flat Styrofoam (about 9 inches long and 4 inches wide)
 - flat piece of plastic (about 3 inches long and 3 inches wide)
 - 2 small nails
 - 3 long strands of human hair (about 8 inches long)
 - dime
 - glue
 - tape
 - hammer
 - scissors

Procedure:

1. Cut the piece of plastic into a triangular shape (two equal sides, one short side-see example)



2. Tape the dime onto the plastic, near the point
3. Poke one of the nails through the plastic pointer, near the base of the triangle



4. Wiggle the nail until the pointer moves freely and loosely around the nail
5. On the plastic pointer, between the nail and the dime, glue the hair strands to the plastic
6. Position the pointer on the wood (or styrofoam) about $\frac{3}{4}$ of the way down the side
7. Attach the nail to the base (the pointer must be able to turn easily around the nail)
8. Attach the other nail to the base about one inch from the top of the base, in line with the pointer
9. Pull the hair strands straight and tight so that the pointer points parallel to the ground (the hair should hang perfectly vertical and the pointer should point perfectly horizontal)
10. Glue the ends of the hair to the nail
11. Make a mark to indicate where the pointer is

The human hair cells will indicate the level of moisture in the air by expanding and contracting. When the air is moist, the hair will expand and lengthen, making the pointer point down. When the air is dry, the hair will contract and shorten, making the pointer point up.