

# WATER BALANCING ACT

---

## Materials:

- \*Two plastic straws
- \*Straight or common pin
- \*Two paper clips
- \*Small lump of clay
- \*Small plastic bowl or margarine tub (thoroughly cleaned and dried)
- \*Scissors
- \*Water
- \*Waxed paper
- \*Typing paper
- \*Construction paper
- \*Gift-wrapping paper

**Objective:** Learn how surface tension can affect the pull of different types of paper.

## Vocabulary words:

Surface tension – attraction of water molecules to the surface.

## Instructions:

1. Push the pin into the middle of one straw, and then insert the end of the pin in the end of the other straw. This should make the straws look like a “T”.
2. Put the end of the “T” into the lump of clay.
3. Unfold one end of a paper clip and jab the unfolded end into one end of the horizontal (sideways) straw. Unfold the end of another paper clip and jab it on the other side of the horizontal straw.
4. take a piece of ½” x 5” (1-1/3cm x 1/3cm) waxed paper, and fold it like an accordion. Place the folded waxed paper onto one of the paper clips hanging from the straw.
5. Set the tub or bowl of water under the end of the paper clip that has the waxed paper attached to it.
6. Wet the bottom of the waxed paper.
7. Push the straw until the end with the waxed paper rests on the surface of the water.
8. Attach paper clips to the end of the other paper clip until the waxed paper is lifted from the water’s surface. (Note how many paper clips it takes to lift the paper out of the water.)
9. Try this activity with typing paper, construction paper and gift-wrapping paper. (Note the number of paper clips it takes to lift the paper out of the water.)

### **How does it work?**

Water has a property called surface tension. Surface tension is when water molecules are so attracted to each other that they form a skin-like layer. The molecules on the surface of the water pull on one another and allow the water to stretch and bulge. This tension prevents the water from spilling over. Surface tension will continue until forces (such as the weight of paper clips) break the surface tension. Wax creates a protective covering, which disrupts surface tension. The construction paper is heavier and more porous (more “holey”) than the other types of paper, so it requires the most amount of force to break with surface tension.

### **Questions to Ask:**

1. Which type of paper needed the most paper clips to lift it out of the water? Why?
2. Which type of paper needed the least paper clips to lift it out of the water? Why?
3. What do you think the results would be if you put soap or detergent in the water? Why?