

## SURFACE TENSION AND WATER STRIDERS

### Oregon Science Content Standards:

K.1 Structure and Function: The natural world includes living and non-living things

K.2 Interaction and Change: Living and non-living things move

K.3 Scientific Inquiry: Science explores the world through observation

### Goals:

- students experience a characteristic of water: surface tension
- students practice making predictions and experimenting

### Concepts:

- Water has a sticky skin which can support water striders and other lightweight objects.
- This sticky skin is called surface tension.

### Materials:

- a lid or tray
- toothpicks, one per student plus one extra
- laminated worksheets (“Drag a Drop” on front, maze on back)
- plastic wrap (about 1 foot length)
- clear, shallow container of tap water
- paperclip
- drop of liquid soap
- water striders (netted from local stream and kept in bucket with pond water)
- 5 plastic containers for observation of water striders

### Lesson Plan:

#### Introduction: Drag A Drop\*

1. Ask the class to think about a droplet of water, like a raindrop, once it lands on something it can't soak into. What would it look like from the side?
2. Draw three drops: one with a sphere-shaped drop, one with a pancake-shaped drop, and one with a hill-shaped drop. Have the students **predict** which way a drop of water would look from the side.
3. Then show them several drops of water on a tray or lid, and have them look at the drops from the side. Now ask them which of the drawings it resembles (a hill!)

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4. Explain that they are going to further explore water drops. Distribute the laminated worksheet (“Drag a Drop” side up) to each student.
5. Put a drop of water onto each worksheet, and give each student a toothpick. (Make sure to demonstrate safe use of the toothpick.)
6. Challenge the students to drag their drops from one circle to another, combine them, and cut them apart.
7. If there is time, have the students flip their sheets and try dragging a drop through the maze.
8. Ask for their observations about water. Students should notice how “sticky” the water is.

### Sink or Float (surface tension version)

9. Discuss with the students their observations of water’s “sticky skin”. Stretch some Saran wrap across your fingers as a comparison. Water’s sticky skin is very weak, but can support some small, light objects.
10. With a clear, shallow container of water, demonstrate that a paperclip placed end into the water sinks, but that you can very gently lay the same paperclip on the surface of the water without it falling in.
11. Have students try this activity themselves.
12. Optional: Explain that soap breaks this water skin. Touch a toothpick dipped in liquid soap to the surface of the water. The paperclip will sink. Again, you can let students try this themselves.

### Water Striders

13. Discuss how some insects are also small, light and thin and can walk on the surface skin of water.
14. Have the students examine live water striders. Keep them in containers with walls that are at least 5 inches high to prevent the water striders from jumping out. Give the students a few minutes to make their own observations of these fascinating creatures and how they move on top of water.

**Assessment:** How can the water striders walk on the surface of the water—why don’t they sink? Take suggestions and then have the students compare the water striders (and their legs) to the paperclip they saw float. They may realize that the water striders are small, light, long, and thin, all of which help them to walk on the water’s “sticky skin”.

### **Sources:**

\*Drag A Drop Adapted from:

UC Berkeley. 2001. *MARE: Marine Activities, Resources & Education, Teacher’s Guide to Ponds.*  
Water, Water Everywhere.

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