

# The Mystery of the Sponge

## Summary

Students observe that water has weight and that weight decreases as water evaporates. The changes that occur as a sponge dries on a yardstick balance illustrates this concept.

## Materials

For the Teacher:

- Yardstick (or meter stick)
- Sponge
- Paper and pencil
- String
- Water
- 2 towels
- 2 glasses
- 2 balloons

## Background for Teachers

This activity will demonstrate that water has weight by balancing a wet sponge on a yardstick. As water evaporates, the weight that water has as a liquid will be turned into water vapor. Though the water (and the weight) does not disappear, it can be removed from a system (in this case, a sponge) and be dispersed (both the vapor and its weight) into surrounding air. During the two hours this experiment will take, much, if not all, of the moisture in a wet sponge will evaporate. Please note that the sponge cannot be wrung completely dry. The system will become unbalanced as the water evaporates and the sponge becomes lighter and lighter. This activity would be an excellent introduction to an activity on evaporation.

## Intended Learning Outcomes

1. Make observations and predictions. 3. Maintain a sense of curiosity about natural phenomena. 5. Demonstrate science concepts and principles.

## Instructional Procedures

See preface materials at links listed below.

1. Tell students that today they will be detectives and try to solve a mystery. Hold up a wet sponge. Wring it out; get as much of the water out as you can. Have two or three students handle the sponge to conclude that the sponge still feels wet.
2. Tie the sponge to one end of the yardstick. Tie a string near the middle of the yardstick, then suspend it by tying it to an object overhead. If possible, set this experiment up next to a chalkboard or a piece of chart paper. Slide the string along the yardstick until the stick hangs level (see picture). Do not allow the students to touch the sponge while data is being collected.
3. Teacher: Make a mark at the end of the yardstick opposite the sponge and record the time. For the next two hours, check the experiment every 20 minutes. Mark the new position at the end of the yardstick and record the time to create an ongoing timeline for students.
4. At the end of the two hours have students look at various positions of the yardstick versus the time. Ask, "What happened here?" (The stick is no longer straight; the sponge is higher than it was before.) "How did the stick change?" (Each time we checked, the stick was slanted a little more.) "Why did the stick change? What clues do we have to help solve this mystery?" (Sponge is now dry and lighter; it's stiff.)

5. Now ask: "Why did the sponge get lighter?" (The water went away.) "Was the water heavy or light?" (Heavy because it made the stick balance.) "Does water always have weight?" (Yes.) "How else could we prove that?" Have students help you demonstrate: water balloon vs. balloon filled with air, empty glass vs. glass filled with water, dry towel vs. wet towel. Compare results.
6. Ask students, "How did we solve the mystery of the sponge?" (As the sponge dried out it became lighter, and the stick changed its position.)
7. Have students write in a learning log: "Water has weight." Then draw a picture of the sponge experiment.

### Extensions

#### Supporting Literature

White, L. (1995). *Water - Simple Experiments for Young Scientists*. Connecticut: Millborrk Press. ISBN 1-56294-472-X.

Ardley, N. (1991). *The Science Book of Water*. New York: Harcourt Brace Jovanovich. ISBN 0-15-200575-7.

### Authors

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