

# WHAT SHAPE IS WATER?

K-2

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## OBJECTIVES

At the end of this lesson, the students shall be able to do the following:

1. Identify orally a liquid and a solid;
2. Give an oral or written definition of a liquid and a solid;
3. Demonstrate, orally or in writing, the difference in liquids and solids; and
4. Give an oral or written definition of the terms: liquid, solid, vapor, and water.

## BACKGROUND INFORMATION

Water is a substance that can be found in three forms: a liquid, a solid, and a vapor. Water can be found most often in its liquid form and becomes a solid when the temperature drops below freezing 32° F or 0° C. Water becomes a vapor when it escapes into the air. The more heat that is applied to water the faster it vaporizes. Water is in a constant cycle of changing from a liquid to a vapor because it is made up of millions of molecules that are in constant motion.

Water has no shape. In its liquid form it borrows the shape of the container it occupies. Simple experiments can help students become more aware of the properties of water as well as the importance of water in their lives.

### Terms

**liquid:** a free flowing substance that borrows the shape of its container.

**solid:** a hard substance that keeps its own shape.

**vapor:** a substance in the form of a gas having no fixed shape.

### **SUBJECTS:**

Science, Language Arts,  
Writing, Art

### **TIME:**

45 minutes

### **MATERIALS:**

clear plastic containers, various shapes  
spaghetti  
spoon  
water  
different liquids (3 per group)  
ketchup, vinegar, milk, juice  
solids (1 per group)  
marshmallows, marbles,  
unifix cubes  
tub or box (1 per group)  
chart paper or blackboard  
tag board for book  
crayons or markers  
food color  
Shapes by Shel Silverstein

**water:** a clear liquid, or gas made up of tiny molecules of two parts hydrogen and one part oxygen.

## ADVANCE PREPARATION

- A. Collect all materials listed.
- B. Preselect heterogeneous groups. There should be 3-5 students in each group, but can be done as a whole group activity with younger children.
- C. Have the different liquids and containers divided into tubs or boxes for the number of groups.
- D. Have the water droplets precut with the text written on them. List the different liquids and solids on the board or chart paper for the students to copy.

## PROCEDURE

- I. Setting the stage
  - A. Read the poem *Shapes* by Shel Silverstein in [A Light in the Attic](#). Discuss the poem. Discuss different shapes: square, circle, rectangle, triangle, cube, cylinder, and sphere. Discussion depends on your student's knowledge of shapes.
  - B. Have different objects available as examples of these shapes. Look around the room and have the students find objects in the room that are these shapes.
  - C. Ask students "What shape is water?"
- II. Activities
  - A. Pour colored water and dry spaghetti into different clear plastic containers (pitchers, jars, cubes) to demonstrate the difference between a solid and a liquid. Have students pour the water and spaghetti into different containers until they decide that water takes the shape of its container and that water has no shape of its own.
  - B. Introduce the term "liquid." Discuss other substances that are liquids (milk, juice). In small groups let students experiment to see if all liquids have the same properties. Give each group three different shaped containers and three different liquids (milk, juice, pancake syrup, honey, cooking oil, etc.) and one solid object (marbles, marshmallows, unifix cubes). Let each group decide which items are liquid and which are solid. Have each group tell the class why the items they chose were liquid or solid.
  - C. Have students dictate a definition of a liquid and a solid. Record these responses on a blackboard or a large sheet of paper. After they have defined a liquid and a solid, make a permanent record of their definitions.

### III. Follow-Up

- A. Have students make their own big book in the shape of a raindrop to describe the different liquids they have learned. Use the text “ \_\_\_\_\_ is a liquid.” “ \_\_\_\_\_ is not a liquid.”

Students will fill in the blank and draw an illustration of the substance he/she is describing. Be sure to include a front cover, title page, and dedication page if more pages are needed for the book.

### IV. Extension

- A. Water Races. Have students save milk cartons. Put one hole with the same size nail in a side of the carton. Compare each carton and determine which one, when filled with water, will shoot the farthest stream. Tape each hole with masking tape. Fill the cartons with water. Line five cartons on a table with a tub below or outside on a step. Have students pull off their tape at the same time. Determine which stream went the farthest. Repeat with other students to determine the farthest stream. Discuss why the carton won the race. Let students make another attempt the following day. See if any student determines that water has weight and the more weight the longer the stream. Other considerations for discussion and experimentation:

1. Does the volume of water determine the pressure?
2. Does the depth of the container make a difference?
3. What size of hole is most efficient?
4. Where appears to be the best location for the hole and why?

## RESOURCES

Broekel, Ray, Experiments with Water, Childrens Press, Chicago, IL, 1988.

Goldin, Augusta, The Shape of Water, Doubleday & Company, New York, 1979.

Silverstein, Shel, Shapes, A Light in the Attic, Harper & Row, New York, 1981.



