

# WHAT SHAPE IS WATER?

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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.
4. Give an oral or written definition of the terms: liquid, solid, vapor, and water.

**SUBJECTS:** Science, English, Math

**TIME:** 45 minutes

## 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.

## **MATERIALS:**

- \*Clear plastic containers (various shapes),
- \*Spaghetti
- \*Spoon
- \*Water
- \*Different liquids (3 per group)
- \*Ketchup
- \*Vinegar
- \*Milk
- \*Juice solids (1 per group)
- \*Marshmallows
- \*Marbles
- \*Chart paper or blackboard tag board for book
- \*Crayons or markers
- \*Food color

## Terms

**Liquid:** A free flowing substance that takes 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.

**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. Pre-select heterogeneous (unlike) groups. There should be 3-5 students in each group, but this 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.

## **PROCEDURE**

### **I. Setting the stage**

- A. Discuss different shapes: square, circle, rectangle, triangle, cube, cylinder, and sphere. Discussion depends on your students' knowledge of shapes. **(English TEKS K.4A, 1.4A) (Math TEKS K.9A,B,C, 1.6A,B, 2.7A) (TAAS Math-Geometric Properties-Objective 3)**
- 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. **(TAAS Math-Geometric Properties-Objective 3)**
- C. Ask students "What shape is water?"

### **II. Activities**

- A. Pour colored water and dry spaghetti into different clear plastic containers (pitchers, jars, and 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. **(English TEKS K.4B,C, 1.4B,C, 2.4A,B) (Science TEKS K.10A) (TAAS Writing-Classificatory).**

## B.2

- 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). 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. **(Math TEKS K.9A,B,C, 1.6A,B, 2.7A) (TAAS Math-Geometric Properties-Objective 3)**
- 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. **(English TEKS K.8A,B, 1.11A,B, 2.8A,B,C, 2.14A) (TAAS Reading-Word Meaning-Objective 1)**

### III. Follow-Up

- A. Make copies of and use the text "\_\_\_\_\_ is a liquid." "\_\_\_\_\_ is not a liquid" located in this Educator's Book to describe the different liquids they have learned. Students will fill in the blank and draw an illustration of the substances he/she is describing.

### IV. Extension

- A. Water Races. Have students save milk cartons. Put one hole with the same size nail in a side of each carton. Vary the height chosen for the hole on each carton. Compare each carton and predict 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 other attempts the following day. Lead students to determine that water has weight and the more weight the longer the stream. Other considerations for discussion and experimentation:
1. Does the depth of the container make a difference?
  2. What size of the hole is most efficient?
  3. Where appears to be the best location for the hole and why?

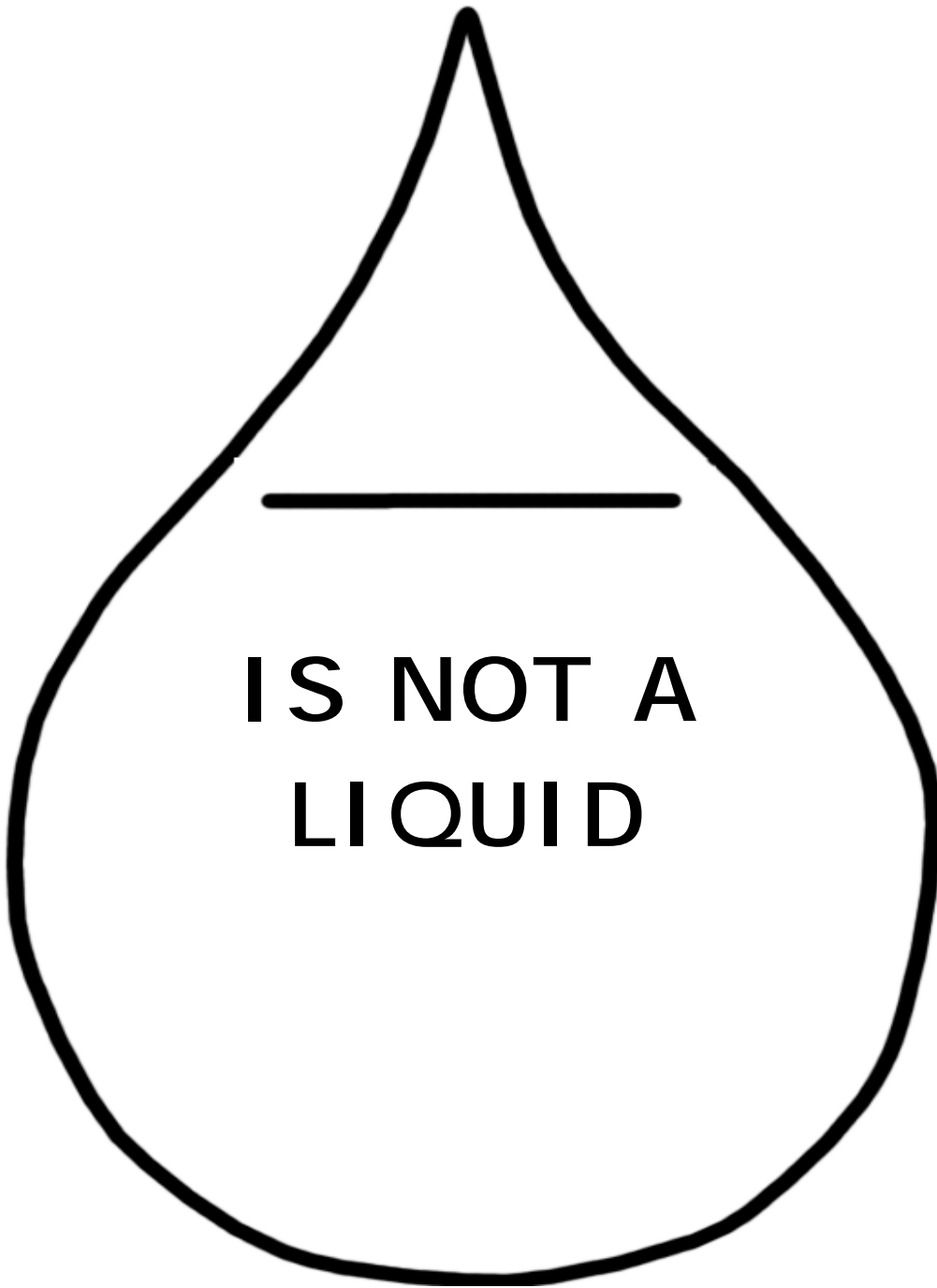
### RESOURCES

"The Water Sourcebook: A Series of Classroom Activities for Grades K-2  
Produced for Georgia Water Wise Council," Education Research and In-  
Service Center, University of North Alabama.

B.3

**ACTIVITY SHEET**  
(Copy Page for Students)  
**WHAT SHAPE IS WATER**

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