



Overview:

During this activity, students learn about the similarities and differences in water in its solid and liquid forms.

Objectives:

The student will:

- identify two states of water (liquid and solid);
- explain how water changes between the two states; and
- illustrate water in both solid and liquid form.

GLEs Addressed:

Science

- [3-4] SA1.1 The student demonstrates an understanding of the processes of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring, and communicating.
- [4] SA1.2 The student demonstrates an understanding of the processes of science by observing, measuring, and collecting data from explorations and using this information to classify, predict, and communicate.
- [3] SB1.1 The student demonstrates an understanding of the structure and properties of matter by classifying matter according to physical properties (i.e., color, size, shape, weight, texture, flexibility).
- [3] SB3.1 The student demonstrates an understanding of the interactions between matter and energy and the effects of these interactions on systems by recognizing that temperature changes cause changes in phases of substances (e.g., ice changing to liquid, water changing to water vapor, and vice versa).
- [4] SB3.1 The student demonstrates an understanding of the interactions between matter and energy and the effects of these interactions on systems by explaining that temperature changes cause changes in phases of substances (e.g., ice changing to liquid water and liquid water to water vapor).

Materials:

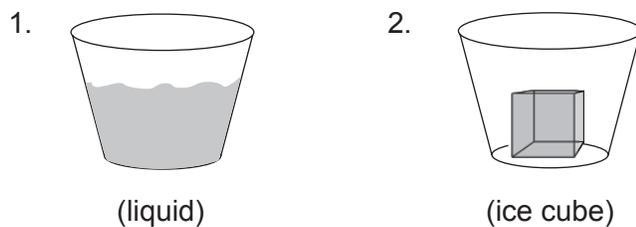
- Water
- Ice cube trays (enough to make two ice cubes per student)
- Clear plastic Dixie cups
- Stopwatch
- STUDENT WORKSHEET: "Solid Water"

Activity Procedure:

1. Ask students to describe the difference between a liquid and a solid. Explain that a liquid is something that flows easily and can take on the shape of the container into which it is poured. Explain that a solid is something that has shape and hardness. Ask students to make a list of liquids and solids.
2. Give each student a Dixie cup of water and ask if water is a liquid or a solid. Students should understand that water is a liquid. Ask how they know. Ask students to use their five senses to describe water. What does it taste like? How does it smell? Describe how it looks. Have students ever heard water (running down the drain or splashing in the tub, lapping against the shore or against a boat, flowing in a river)? How does water sound? How does water feel?

3. Ask students where they can find liquid water in nature. Appropriate answers might include: lakes, rivers, oceans, rain, puddles, under ground, etc.
4. Explain that water is not always a liquid. What is solid water called? Ice! Distribute a Dixie cup with an ice cube in it to each student. Ask students how to turn water into ice. Appropriate answers include: freeze it, put it in the freezer, put it outside in the winter, etc. Ask students to use their five senses to describe ice.
5. Ask students how to turn solid ice into liquid water. Appropriate answers include: warm it up, put it somewhere warm, melt it, etc.
6. Dump out the melting ice cubes and give each student a new cube in their Dixie cup. Ask students to see how fast they can turn a solid ice cube into liquid water without touching the ice cube. Start the stopwatch. When the first student successfully melts his/her ice cube, note the time it took. Allow remaining students to finish melting their ice cubes. Ask students how they made the ice cube melt so quickly. Students may have put their hands around the cup, breathed in the cup, put the cup on a heater vent or near a light bulb, etc. Ask students what all of their solutions had in common. They all made heat to warm up the ice cube. The more heat they made, the faster the ice cube melted.
7. Ask students where they can find solid water in nature. Appropriate answers might include: winter lakes, oceans, rivers, puddles, snow, etc.

Answers to Student Worksheet:



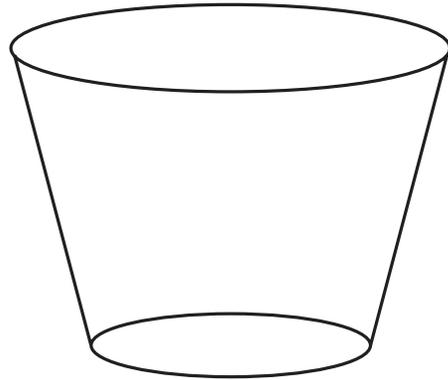
Name: _____

Solid Water

Student Worksheet



1. Draw water as a liquid in the cup below:



2. Draw water as a solid in the cup below:

