

## **Volume: 1.C.III**

### Changing shape of water

<b>Grade Level</b>	1
<b>Sessions</b>	Session I: Use different containers to show water takes on the shape of it's container – 15 minutes Session II: Volume worksheets – 30 minutes
<b>Seasonality</b>	N/A
<b>Instructional Mode(s)</b>	Whole class
<b>Team Size</b>	N/A
<b>MA Frameworks</b>	<u>Skills of Inquiry</u> 2. Tell about why and what would happen if? 3. Make predictions based on observed patterns. 6. Discuss observations with others <u>Physical Sciences</u> 2. Identify objects and materials as solid, liquid, or gas. Recognize that solids have a definite shape and that liquids and gases take the shape of their container.
<b>WPS Benchmarks</b>	01.SC.IS.02 01.SC.IS.03 01.SC.IS.06 01.SC.PS.02
<b>Key Words</b>	Liquid, volume

## **Summary**

This lesson will introduce students to the concept that water and other liquids take on the shape of the container they are in. The teacher will demonstrate to students with various shaped objects that water will take the form of the container. After the demonstration, students will be given two activity sheets to complete.

## **Learning Objectives**

*Massachusetts Frameworks for Grades Pre K-2*

### Skills of Inquiry

2. Tell about why and what would happen if?
3. Make predictions based on observed patterns.
6. Discuss observations with others

### Physical Sciences

2. Identify objects and materials as solid, liquid, or gas. Recognize that solids have a definite shape and that liquids and gases take the shape of their container.

*2002 Worcester Public Schools (WPS) Benchmarks for Grade 1*

**01.SC.IS.02** Tell about why and what would happen if?

**01.SC.IS.03** Make predictions based on observed patterns.

**01.SC.IS.06** Discuss observations with others.

**01.SC.PS.02** Using transparent containers of very different shapes (e.g., cylinder, cone, cube) pour water from one container into another. Observe and discuss the “changing shape” of the water.

### **Additional Learning Objectives**

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1. Understand that different shaped containers can have the same amount of water.
2. Understand that water is a liquid.

### **Required Background Knowledge**

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1. Prior knowledge of volume and making volume measurements.

### **Essential Questions**

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1. What is a liquid?
2. What is water’s shape?

### **Introduction / Motivation**

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Have the students recall what they learned about volume. Give examples of different volumes (such as a lake and an ocean) and ask students which has a bigger or lesser volume.

### **Procedure**

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***Session I: Use different containers to show water takes on the shape of it’s container – 15 minutes***

#### ***Instructor preparation:***

1. Gather necessary materials provided in materials list including different shaped containers. Some examples can be found in the following image.



2. Obtain a pitcher of water for demonstrations.

***The instructor will:***

1. Ask students what they remember about volume. Give examples of different volumes and ask the students which is bigger or smaller.
2. Using 4 different shaped, transparent containers (including a zip-close plastic sandwich bag) fill one with water. Demonstrate to the students that the water takes the shape of the container it is in. Explain to students that this is a property of all liquids. Have students make predictions of what water will look like in the other containers that you are using. Ask if the height will be the same in all of the containers – and why it will not be.
3. Pass around the plastic bag with the water in it, allowing the students to squeeze it and see how the water moves around and forms to whatever shape they make. Caution students to keep the zipper side up, so no water will leak.

**Session II: Volume worksheets – 30 minutes**

***Instructor preparation:***

1. Photocopy the appropriate number of handouts provided in the attachment section.
2. Make transparencies of each handout to go over the answers.

***The instructor will:***

1. Pass out Match the Volume handout to students. Direct students to match the volumes that are equal. They may color the shapes once the handout is completed.
2. Pass out What does water look like? handout to students. Direct students to draw anything that water takes the shape of. Any shape container is correct, and this will allow students to be creative and reinforce the concept.
3. Review both handouts with the class using overhead projections.

**Materials List**

<b>Materials per class</b>	<b>Amount</b>	<b>Location</b>
Containers of different shapes	3	See images to purchase your own
Overhead projections	2	See Attachment Section to print your own
Zip-close sandwich bag	1	Can be purchased at discount department store

<b>Materials per student</b>	<b>Amount</b>	<b>Location</b>
Match the Volume handout	1 per student	Attachment Section
What does water look like? handout	1 per student	Attachment Section

**Vocabulary with Definitions**

1. *Liquid* – a fluid, such as water, that flows and takes the shape of the container it is held in
2. *Volume* - the amount of space occupied by a three-dimensional object or region of space

**Assessment / Evaluation of Students**

The instructor may assess the students in any/ all of the following manners:

1. Ask questions to ensure that students know that water is a liquid and that liquids form the shape of their containers.

2. Review worksheets to see if students understand that water can have the same volume, but be in different shapes.

### **Lesson Extensions**

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The instructor might use this lesson as an introduction to liquids.

### **Attachments**

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1. Match the Volume handout
2. What does water look like? handout

### **Troubleshooting Tips**

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When the plastic bag is passed around, make sure students keep the opening up right so that water does not leak out of the bag.

### **Safety Issues**

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Students should be supervised.

### **Additional Resources**

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None

### **Key Words**

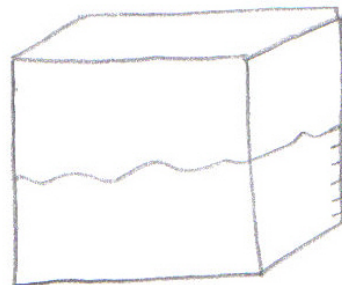
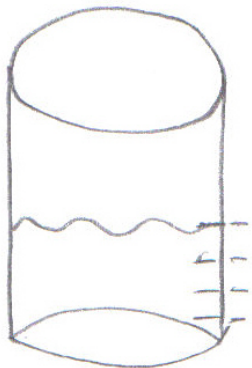
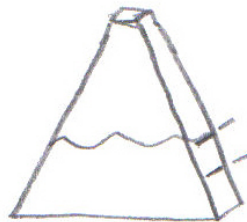
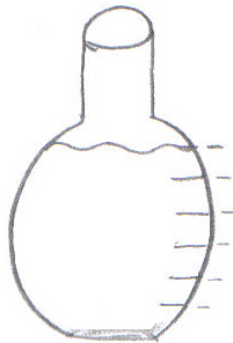
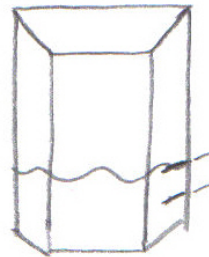
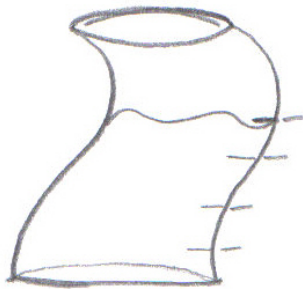
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Liquid, volume

Name \_\_\_\_\_

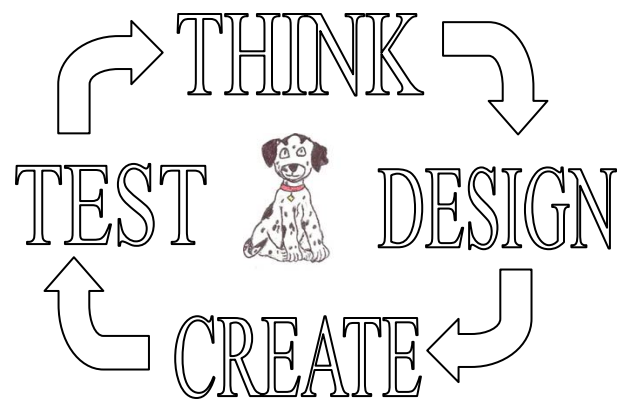
## Match the Volume

Below are 6 different containers with water in them. Draw lines between the containers that have the same volume of water in them.



Name \_\_\_\_\_

What Does Water Look Like?



**Think:** We need to make a container for water

**Design:** What type of material would we need to use? How big should the container be? Draw your container.

A large, empty rectangular box with a thin black border, intended for a student to draw their design for a water container.

**Create:** How would you build your container? \_\_\_\_\_

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**Test:** How would you test if your container worked?

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