

Material Preparation

MATERIALS

- permanent marker
- water table or clear plastic water basin
- clear plastic measuring cup
- funnel
- dropper
- empty 1-liter clear plastic bottle
- gallon-size water bucket or water pitcher
- sheet of chart paper or poster board (approx. 22" x 28")
- water
- plastic grocery bag
- paper towels
- masking tape

For each child:

- ten *Measuring Cup Cutouts*
- *Ask Me About Water* sticker

TEMPLATES

Measuring Cup Cutouts

PREPARE IN ADVANCE

- Prepare a *Volume Predictions Chart*:
 - Create a two-column chart on chart paper.
 - Write each child's name under the *Name* column.
 - Tape the chart on the wall or on a board at the children's eye level.
- Clean and remove label from plastic bottle.
- Fill 1-liter bottle with water. Do not place the lid on the bottle. Add a strip of masking tape from bottom to top of the bottle.
- Fill water bucket or pitcher halfway with water.
- Follow instructions on *Measuring Cup Cutouts*.

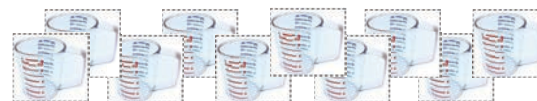
Volume Predictions Chart

Name	Number of Cups
Irene	
Pedro	
Tyler	
Sarah	
Shawn	



SET UP THE LESSON AREA

- Set up the water table or place the basin on the table.
- Cover the bottle with a plastic grocery bag and place it in the water table or basin.
- Place water bucket or pitcher near water table or basin.
- Place the following items on the table: dropper, measuring cup, funnel, paper towels, masking tape, *Volume Predictions* chart, cup cutouts, and marker.



For each child



OBJECTIVE

Children will understand that the volume of water can be measured.

EXCITE

1. Gather the children in the ECHOS lesson area. **I have something that you can swim in and that makes a splashing sound. Can you guess what it is?** Guide the children's responses until someone suggests water.
2. Uncover the bottle. **Yes, water. This bottle is filled with water!** Swing your hand and pretend to accidentally knock over the bottle so that all the water spills into the water table or basin. Dramatize the *accidental* spill. **Oh, no! I am going to need all of you to help refill this bottle.**



INTRODUCE

1. **What tools can we use to refill this bottle?** Listen to the children's responses. Show children the dropper. **This tool is called a *dropper*. We can use it to measure one *drop* at a time.** Fill the dropper with water from the basin, then place a drop of water on the table top.
2. **How much water is in this little drop? Show me with your fingers, like this.** Model the volume of the drop of water by looking through a small space between your thumb and index finger. **Do you think this is the amount of water we need to refill the bottle? No, this amount is too *small*.**
3. Show children the measuring cup. **This tool is called a *measuring cup*. Sometimes we use a measuring cup in the kitchen to measure things like oil or milk. Who has seen a measuring cup at home?**



4. Fill the measuring cup with water from the bucket or pitcher, and place it where all can see.
How much water is in this measuring cup? Use your hands to show me how much water is in this measuring cup. Cup your hands together to estimate the amount.
Yes, about this much.
5. **A measuring cup holds a lot more than one drop of water. Do you think the water in this cup is enough to refill the bottle?** Listen to the children's responses.
No, it isn't.
6. **When we talk about how much water there is, we are talking about its *volume*. When there is a little water, it has a smaller volume. When there is a lot of water, it has a larger volume.** Place another drop of water on the table top next to the cup of water.
7. **Which one has a *smaller* volume of water? Yes, the drop. The drop of water has less volume than the cup of water. Which has a *larger* volume of water? Yes, the measuring cup of water.**









EXPLORE

1. Point to the measuring cup. **We will use this tool to measure how much water we need to fill the bottle.**
2. Point to the *Volume Predictions Chart*. **First, we're going to record your *predictions* on this chart.**
3. **I'm going to ask each of you to make a prediction.** Choose a child to begin.
How many cups of water do you think we need to refill this empty bottle?



4. Tape the child's name card in the column labeled *Name*. Ask the child to predict a number of cups between 1 and 10. Listen to their reply, then count out the same number of *Measuring Cup Cutouts*. Allow the child to tape them in a row under the column labeled *Number of Cups*. Repeat with each child in the group.
5. **Now let's test your predictions.** Hold up a funnel. **This tool is called a *funnel*.** Fit the base of the funnel into the opening of the bottle, and hold it in place. **Watch how the funnel helps us pour the water into the bottle.**
6. Have children take turns carefully filling the measuring cup with water from the bucket and then pouring the water into the bottle through the funnel. **Each time we add a cup of water, I will draw a line on the bottle.** The lines will tell us how many cups we have poured. Use a permanent marker to mark the water level every time an additional cup is added.
7. **Good job pouring the water! The bottle is full. How many cups of water did we pour in the bottle?** Count the lines on the bottle with the children. **What is the volume of water in the bottle? It's the same as the cups of water in the bottle. The volume of water in the bottle is _____ cups.**
8. **Let's check the results. Were your predictions close to what we discovered?** Compare the findings to the children's estimates recorded on the *Volume Predictions Chart* at the beginning of the investigation.
9. **What we just did is called an investigation. First, we recorded our predictions on this chart.** Point to the *Volume Predictions Chart*. **Next, we tested our predictions by filling the bottle.** Indicate the measuring cup and bottle. **Finally, we checked the results.** Emphasize that the most important part of an investigation is testing predictions.



Name	Number of cups
Alejandro	 5
Luckeesha	 2
Karla	 5
Jotherlene	 1
Donovan	 3
Jesur	 4

INTERACT

Interact to accommodate children's individual needs and strengths. Use these suggested strategies as needed:

- Water play can make the floor slippery. Be sure to wipe up all spills immediately or use a floor mat to protect the floor. Designate some children to be the official splash wipers to help keep the area dry during the lesson.
- Pouring is a new skill for some children. Some children may need guidance when pouring from the measuring cups into a funnel.
- To make it easier to tape the cups onto the *Volume Predictions Chart*, place loops of tape on each row of the chart and encourage the children to press the paper cups to the tape.

OUTCOMES

1. Regroup the children in the ECHOS lesson area. **What did we discover today?**

Listen to the children's responses. If needed, use suggested prompts to elicit key concepts and vocabulary. Encourage responses from everyone.

- **What tools did we use today?**
- **What did we do with the tools?**
- **How many cups of water did it take to fill the bottle?**
- **How did we find out?**

2. Give each child an *Ask Me About Water* sticker.



Remind the children to tell their family something they have learned about measuring water.

3. After you have completed *Lesson #1: What a Mess!* with all children in your classroom, place the ECHOS materials suggested below near your water table to encourage exploration.

VOCABULARY

- drop
- dropper
- funnel
- large/larger
- measuring cup
- prediction
- small/smaller
- volume



droppers



funnel

Name	Number of cups
Alexandro	5
Luckasha	2
Karla	5
Isabelle	1
Donovan	3
Jesur	4

Volume Predictions Chart



measuring cup



Measuring Cup Cutouts

Instructions:

1. Make one photocopy of this page per child.
2. Cut along the dotted lines.
3. Each child gets ten *Measuring Cup Cutouts*.



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