## What's the Connection?

You need: a classmate, a $10 \times 10 \times 10 \mathrm{~cm}$ solid wooden or plastic cube, a bucket, a plastic basin, kitchen scales with a bowl, a measuring jug, water, various plastic bottles with their labels still on, 12 one-metre rules or sticks, sticky tape

Julia says there is a handy connection between the mass and volume of water. Angie and Brianna aim to find out what it is:
 fill it to the top, making sure it doesn't overflow.


They tip the overflow from the basin into a measuring jug and read off the volume.


They carefully push a $10 \times 10 \times 10 \mathrm{~cm}$ wooden cube down into the water so that it is just covered.


They pour this water into the bowl of the kitchen scales and note its mass.

1. Working with a classmate, carry out Angie and Brianna's experiment.
a. How much water fills the space taken by $1000 \mathrm{~cm}^{3}$ ?
b. What is its mass?
c. What is the handy connection that Julia talked about?
2. Find a number of different plastic bottles with their labels still on. Fill them with water.
a. Read the volume on the labels and use this information to predict the mass.
b. Weigh the bottles. How close were your predictions?
3. Use 12 one-metre rules (or sticks) and sticky tape to build a "cubic metre". Explain to your classmates how much water this cube would hold (if it could hold water), how much the water would weigh, and how you know.
