

## Investigation 3.2

# Modeling the Water Cycle on Earth

## Materials

### For you

- Science notebook
- Student Sheet 3.2: *Modeling the Water Cycle*

### For your group

- 3 Plastic measuring cups
- 2 Bookends
- 1 Balance
- 1 Clamp lamp
- 1 Plastic container with lid
- Access to electricity

### For the class

- Blue water
- Crushed ice

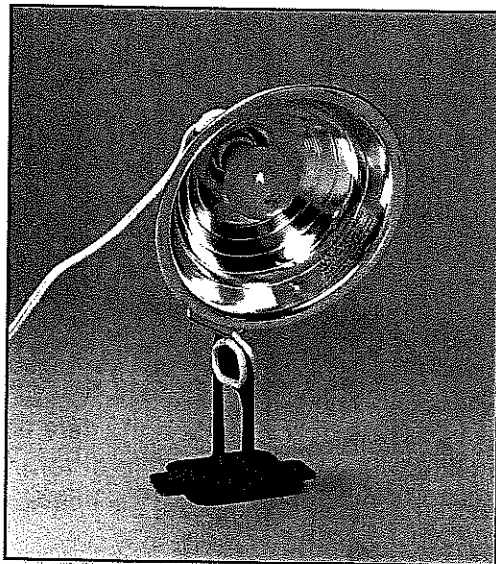


Figure 3.3

Setting up the lamp

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## Procedure

### Day 1

1. Set up the lamp by clamping it to two bookends as shown in Figure 3.3.
2. Place 20 mL of blue water in a measuring cup.
3. Find the mass of the water and measuring cup. Record this in Table 1 on Student Sheet 3.2.
4. Fill a second measuring cup with ice.
5. Find the mass of the ice and measuring cup. Record this in the table.
6. Add the mass of the measuring cup with water to the mass of the measuring cup with ice and record the total in the table.
7. Place the measuring cups containing the water and ice inside the large (16-oz) plastic container.
8. Place the lid on the large container. Press down firmly to secure the lid.
9. Make detailed observations of the container. Think about all the places in the container where water might be. Record these on Student Sheet 3.2.
10. Carefully place the container under a light source, as directed by your teacher.
11. Allow the container to remain exposed to the light for 24 hours.

## Day 2

1. Make detailed observations of the container. Think about all the places in the container where water might be. Record these on Student Sheet 3.2.
2. Take the lid off the large plastic container.
3. Remove the measuring cups from the container.
4. Find the mass of each measuring cup and its contents. Record this in Table 1 on Student Sheet 3.2.
5. Place another measuring cup on the balance and zero the balance.
6. Remove the measuring cup from the balance and pour the water that was in the large plastic container into the empty measuring cup.
7. Place the measuring cup back on the balance. Record the mass of the water in the table.
8. Add the masses of the two measuring cups and their contents to the mass of water. Record the total in the table. How does this value compare to the total mass calculated on Day 1?
9. Read Building Your Knowledge: *The Water Cycle: From the Sky to the Land and Back Again*. Then answer the following questions in your science notebook:
  - a. In what ways does the water cycle affect local weather?
  - b. What sources supply water vapor to the air?
  - c. How was your model similar to the water cycle?
  - d. What limitations exist with your model? How is it not like the water cycle?