Jaime and Rebecca are conducting a chemistry investigation in their science class. First, they head over to the supply table. Jaime and Rebecca collect a large amount of each chemical to take back to their table. They work individually, and each runs his or her own investigation. After the investigation is over, Jaime throws away the dead batteries and washable plastic containers he used. Rebecca pours all the chemicals she used down the drain.

What is wrong with how Jaime and Rebecca conducted their investigation? Jaime and Rebecca were very wasteful. There are many ways to properly use, conserve, and dispose of natural resources and materials when conducting indoor and outdoor scientific investigations. Carrying out investigations in a responsible way can reduce pollution and waste. It can also ensure that natural resources and other materials will be available for future generations.

**Reuse**
At the end of the investigation, Jaime threw away the plastic containers he used. This created waste. Instead, Jaime could have cleaned and reused the containers. Here are some other ways you can practice reusing:

- Use washable glass and plastic containers.
- Use rechargeable batteries.
- Reuse materials that would otherwise be thrown away to construct models, such as paper towel tubes, scrap paper, aluminum cans, packing materials, magazines, plastic bags, or egg cartons.
- Make a list of science supplies in your school and how they can be shared and reused. Equipment like glassware, measuring tools, terrariums and aquariums, and electronic equipment can easily be washed or divided up and reused.
Practicing Conservation During Scientific Investigations

**Reduce**
Before beginning their investigation Jaime and Rebecca went to the supply table and got large amounts of each chemical. Jaime and Rebecca each carried out their own investigation. They should have measured out their materials and worked as a pair. This would have reduced the amount of materials Jaime and Rebecca used. Here are some ways you can practice reducing:

- Only take the correct amount of materials that you need to conduct the investigation. Measure at the supply table so that you use only as much as you need to conduct the investigation.
- Never work alone in an investigation. Work in small groups or pairs for safety and in order to reduce the amount of materials used.
- Do not leave the water running when washing glassware.
- Turn off the power to all electronic devices when not in use.
- Collect only the natural objects that you need when conducting field investigations. Try to observe organisms without taking them out of the environment.

**Recycle**
Recycling is a process in which waste materials are converted into new products. Recycling is encouraged to conserve materials in scientific investigations. Jaime threw worn-out batteries into the trash, but he could have recycled them. Read about some other ways to recycle materials from laboratory and field investigations.

- Recycle dead batteries in specially marked containers. Old batteries can be recycled into new batteries.
- Recycle broken or worn out glassware. Be sure that the glassware has been rinsed well before recycling it. Ask your teacher for help handling broken glassware.
- Find ways to recycle broken or outdated electronic equipment. The materials in computers, speakers, calculators, timers, and other electronic lab equipment can be used to repair or build new electronic equipment.
Dispose
When Rebecca finished her investigation, she poured all the chemicals she used down the drain. This was a dangerous way to dispose of the chemicals. The chemicals could have reacted with each other and caused an accident. It was also potentially harmful to the environment. Here are some ways to responsibly dispose of the materials used during scientific investigations:

- Follow teacher directions before pouring anything down the drain or into the ground. Certain chemicals, organisms, and materials are not safe to dispose of into a drain or a natural space.
- Consult the Material Safety Data Sheets (MSDS) for information about proper use and disposal of materials.
- Try to recycle items such as batteries and electronic equipment. If you cannot recycle them, find a waste company or a store that will accept them for disposal.
- If your investigation involves any type of food or plant material, research whether these items can be added to a compost pile.
- Any sharp materials, such as razor blades, scalpels, or dissecting pins should be disposed of in a specially marked “sharps” container. This sturdy container prevents the sharp materials from accidentally hurting someone.

Material Safety Data Sheets describe the proper procedures for handling and disposing of chemicals.
Check for Understanding:
1. Why is it important to properly use, conserve, and dispose of materials during scientific investigations?

2. What are two ways you can practice reusing materials during scientific investigations?

3. How does working in pairs and premeasuring supplies for investigations help the environment?

4. You are working with a partner during a field investigation. You add some chemicals to samples of pond water. After you are finished with your investigation, your partner pours the water and chemicals back into the pond. What should your partner have done instead?