Name _____ Class _____ Date _____

CHAPTER 1 The Nature of Physical Science

SECTION 3

Safety in Science

BEFORE YOU READ

After you read this section, you should be able to answer these questions:

- What can you do to make the lab safe?
- What special precautions are necessary for working in a science lab?
- What is the safest way to respond to accidents?

California Science Standards

8.9.a

How Do You Keep Yourself Safe in the Lab?

You must be careful when you work in a science lab. It contains fragile glassware, liquids that can spill, and dangerous equipment. Accidents can happen to anyone, but you can take simple safety steps to avoid mishaps.

STUDY TIP

List As you read this section, write down a list of mistakes that may be made in a lab. Also write down ways to correct or prevent them.

AVOIDING ACCIDENTS

Be aware of what is going on around you. Pay attention, follow directions, and watch what you are doing. When you put materials on the lab bench, be sure that they will not tip over. Learn to use all lab materials safely and correctly. Lab materials could include chemicals, heat sources, animals, and plants. ☑

READING CHECK

1. Identify Name four lab materials that need to be used carefully.

_____

_____

_____

Walk carefully around the lab area. Take care not to bump into anyone. Look out for others who are carrying liquids or breakable glassware.

Wear the right safety equipment. This equipment may include lab coats or aprons, goggles, and gloves. Some of the items pictured below are used for personal safety.

When you work in a science lab, your lab materials can include chemicals, heat sources, animals, and plants. All must be handled safely.

TAKE A LOOK

2. Identify In the figure, circle the piece of safety equipment that will protect your eyes.

REPORTING ACCIDENTS

If you have an accident, no matter how small, tell the teacher right away.

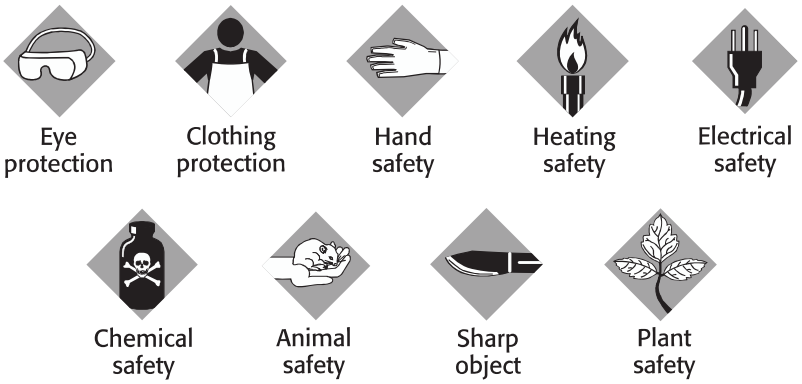
What Special Precautions Do You Take in a Science Lab?

You will find special materials and equipment in the lab. Before you do experiments, you need to learn the correct ways to use the equipment.

UNDERSTANDING SAFETY SYMBOLS

Scientists use symbols to alert themselves. The symbols remind them to use certain precautions. The chart below lists the safety symbols.

Safety Symbols



Say It

Identify On a blank piece of paper, draw several safety symbols. Have members of the class identify what the symbols represent.

FOLLOWING SAFETY SYMBOLS

Each symbol requires that you use specific precautions. For example, the symbol for heating safety has three safety measures. You need to clear your work area of materials that can catch fire. If you are wearing long sleeves, you need to roll them up. If you have long hair, you need to tie it back.

Your teacher will explain the meaning of each safety symbol. He or she will also tell you what preparations you must make.

FOLLOWING DIRECTIONS

Be sure to follow lab procedures exactly. Failure to follow directions is the most common cause of accidents. Your teacher has carefully planned directions to produce the best and safest results. Follow these rules: ☑

- Read all procedures before beginning a lab activity.
- Ask for help on anything you don't understand.
- Ask your teacher if there is something you think should be done differently.
- Measure chemicals precisely (don't take more than you need).

READING CHECK

3. Identify What is the most common cause of accidents?

_____

NEATNESS

Working in a cluttered area is unsafe and unorganized. Clear your work area. Remove unnecessary books, backpacks, hats, and coats.

Clean up any chemical spill right away. Keep flammable objects away from Bunsen burners and other heat sources. ☑

READING CHECK

4. Define What should you keep flammable objects away from in the lab ?

_____

_____

PROPER SAFETY EQUIPMENT

Safety equipment prevents accidents in the lab.

Eye Protection You need to wear safety goggles whenever you are handling liquids. The goggles should fit snugly. You can adjust them to fit your size. Eyeglasses are not enough. You need to have eye protection on the sides also.

Hand and Clothing Protection You need to wear gloves if you are handling plants, small animals, or certain chemicals. When handling warm objects, or using a hot plate or open flame, wear heat-resistant gloves.

Aprons Lab coats and aprons protect your clothing. Spills from certain chemicals can stain your clothes. Other chemicals can eat holes in your clothes.

Proper safety equipment should be used in a science laboratory.

Critical Thinking

5. Explain Why is it dangerous to wear contact lenses when you are working with chemicals that are gases?

_____

_____

_____

TAKE A LOOK

6. Identify Circle two sources of danger that goggles, heat-resistant gloves, and aprons protected you from.

CLEANING UP

When you have finished, you should do the following:

- Return all materials and chemicals to the proper place.
- Give damaged glassware to your teacher.
- Turn off all burners and hot plates.
- Wipe your work area with a damp paper towel.
- Wash your hands.

How Do You Respond to Accidents?

Always tell your teacher if an accident happens. You should know where the safety equipment can be found.

EMERGENCY EQUIPMENT

Science labs have special emergency equipment. Your lab should have a fire extinguisher, a fire blanket, an eye bath, and a first aid kit.

Your teacher will know how to use them.

Make sure that you can locate and use the first-aid supplies and special safety equipment in your science lab. Your teacher can tell you the location of these supplies and the equipment and show you how to use them.

PROPER ACCIDENT PROCEDURES

Make sure that you are safe. If there has been a spill, be careful that you don't slip on the floor. If some glassware has been broken, don't touch the glass.

Tell your teacher about any accident. He or she will take care of any injured students. Your teacher may have to perform first aid. **First aid** is an emergency care for someone who is hurt or sick. Sometimes, the student may need more serious medical help. A nurse or doctor is trained to help with serious injuries. ☑

PROCEDURES FOR ACCIDENTAL INJURIES

Care for an injury depends on the type of injury. Always tell the teacher. If you burn your hand, place it in cold water for 15 minutes. If you get a burn from a chemical, rinse the chemical off your skin. Then, place the burned area under cold, running water for 15 minutes.

If a chemical gets in your eyes, wash your eyes in the eye bath for 15 minutes. Then cover your eyes with a clean cloth.

If you cut yourself, rinse the cut gently. Then apply slight pressure with a clean cloth.

TAKE A LOOK

7. Identify Circle the first-aid kit, fire extinguisher, fire blanket, and eye bath in the figure.

READING CHECK

8. Describe What is first aid?

_____

_____

_____

Critical Thinking

9. Identify What three pieces of safety equipment can probably prevent all the injuries described in the text?

_____

_____

Name _____ Class _____ Date _____

Section 3 Review

8.9.a

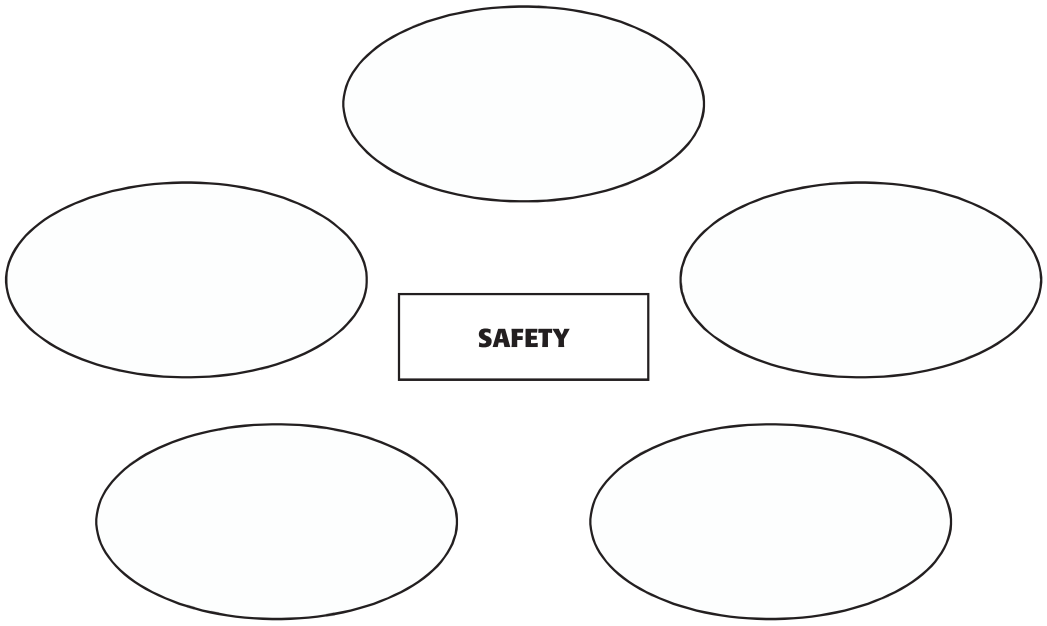
SECTION VOCABULARY

first aid emergency medical care for someone who has been hurt or who is sick	

1. Explain What is the first important rule when following directions?

_____

2. Complete Fill in the ovals in the Process Chart with the procedures that help keep you safe in the lab. Draw arrows from the procedures to the safety box.



3. List What types of safety equipment are found in your lab?

_____

_____

4. Explain After you tell your teacher, what should you do if you burn your hand?

_____

5. Complete Under each safety symbol, write what it means.