







Name: \_\_\_\_\_

**Skill Builder****Safety Skills**

Science equipment and supplies are fun to use. However, this equipment and carrying out procedures in an Investigation always require safety. Here you will learn how to be safe in a science lab. When you use safe practices, you create an environment in which everyone can be safe.






**1. Safety icons**

Throughout the CPO Science Investigations, safety icons and words and phrases like “caution” and “safety tip” are used to highlight important safety information. Read the description of each icon carefully and look out for them when reading the Student Text and the Investigations.

	<b>Use extreme caution:</b> Follow all instructions carefully to avoid injury to yourself or others.
	<b>Electrical hazard:</b> Follow all instructions carefully while using electrical components to avoid injury to yourself or others.
	<b>Wear safety goggles:</b> Requires you to protect your eyes from injury.
	<b>Wear a lab apron:</b> Requires you to protect your clothing and skin.
	<b>Wear gloves:</b> Requires you to protect your hands from injury due to heat or chemicals.
	<b>Cleanup:</b> Includes cleaning and putting away reusable equipment and supplies, and disposing of leftover materials.






**2. Safety guidelines**

Read these safety guidelines before each Investigation.

1. Always prepare for each Investigation.
  - a. Read the Investigation sheets carefully.
  - b. Take special note of safety instructions.
2.  Pay close attention to your teacher’s instructions before, during, and after the Investigation. Take notes to help you remember what your teacher has said. Special safety instructions from your teacher will include information about:
  - a. Working with hot items or solutions.
  - b. Working with electrical components.
  - c. How to use your equipment and supplies.
  - d. How to dispose of chemicals and trash.
3.    If the Investigation requires protective devices or clothing (a lab apron, goggles, gloves), gather these at the beginning of the Investigation.
4. Emphasize teamwork. Help each other. Watch out for one another’s safety.
5.  Always clean up after an Investigation. Your teacher will give you special instructions for disposing of your materials.

## Skill Builder Safety Skills

**3. Special instructions about safety topics**

1.  Thermal hazards.
  - a. Always carry or hold hot items with a hot pad. Never use your bare hands.
  - b. Move carefully when you are near hot items or solutions. Sudden movements could cause you to burn yourself by touching or spilling something hot.
  - c. Inform others if they are near hot items or liquids.
2.  Electrical hazards.
  - a. Always keep electrical components away from water.
  - b. Avoid creating a short circuit with electrical components. Short circuits could cause the components to heat up or spark.
  - c. Remove metal accessories (watches and jewelry) when working with electrical components.
3. Chemical hazards.
  - a.   Use goggles and gloves when working with chemicals whether you are inside the lab or outside doing a field experiment.
  - b. When making an acidic or basic solution, be sure to pour the acid or base into water so that it is safely diluted. NEVER pour water into an acid or base.
4.  Disposal of materials and supplies.
  - a. Generally, liquid household chemicals can be poured into a sink. Completely wash the chemical down the drain with plenty of water.
  - b. Generally, solid household chemicals can be placed in a trash can.
  - c. Any liquids or solids that **should not** be poured down the sink or placed in the trash have special disposal instructions. Follow your teacher's instructions. Special disposal instructions can be found on the Materials Safety Data Sheet for a chemical.
  - d. If an item breaks, do not use your bare hands to pick up the pieces. Use a dustpan and a brush to clean up. "Sharps" trash (trash that has pieces of glass) should be well labeled. The best way to throw away broken glass is to seal it in a labeled cardboard box.
5. What to do in case of danger or an emergency:
  - a. If you are concerned about your safety or the safety of others, talk to your teacher immediately. Talk to your teacher immediately when:
    - \* You smell chemical or gas fumes. This might indicate a chemical or gas leak.
    - \* You smell something burning.
    - \* You injure yourself or see someone else who is injured.
    - \* You are having trouble using your equipment.
    - \* You do not understand the instructions for the Investigation.
  - b. Listen carefully to your teacher's instructions.
  - c. Carefully follow your teacher's instructions.

**Skill Builder Safety Skills**

**4. Safety quiz**

1. Draw a diagram of your science lab in the space below. Include in your diagram the following items. Include notes that explain how to use these important safety items.

- Exit/entrance ways
- Eye wash and shower
- Location of special safety instructions
- Fire extinguisher(s)
- Location of eye goggles and lab aprons
- Sink
- Fire blanket
- First aid kit
- Trash cans

2. How many fire extinguishers are in your science lab?

3. List the steps that your teacher and your class would take to safely exit the science lab and the building in case of a fire or other emergency.

---



---



---



---

4. Before beginning certain Investigations, why should you first put on protective goggles and clothing?

---

**Skill Builder Safety Skills**

---

5. Why is teamwork important when you are working in a science lab?

---

---

---

6. Why should you always clean up after every Investigation?

---

---

---

7. For one Investigation, you need to combine 40 milliliters of a 1 percent acid solution and 160 milliliters of water to make 200 milliliters of a 0.2 percent acid solution. Which of the following procedures do you follow and why?

- You pour 160 mL of water into a beaker. Then you carefully add 40 mL of the 1% acid solution to the water in the beaker.
- You pour 40 mL of the 1% acid solution into a beaker. Then you carefully add 160 mL of water to the acid in the beaker.

---

---

---

8. List at least three things you should do if you sense danger or see an emergency in your classroom or lab?

---

---

---

---

**Skill Builder Safety Skills**

9. Five lab situations are described below. What would you do in each situation? Explain how you would be careful and safe in each situation.

- a. You accidentally knock over a beaker and it breaks on the floor.

---

---

- b. You accidentally spill a large amount of water on the floor.

---

---

- c. You suddenly you begin to smell a "chemical" odor that gives you a headache.

---

---

- d. You hear the fire alarm while you are working in the lab. You are wearing your goggles and lab apron.

---

---

- e. While your lab partner has her lab goggles off, she gets some liquid from the experiment in her eye.

---

---

- f. A fire starts in the lab.

---

---

**Safety in the science lab is the responsibility of everyone! Help create a safe environment in your science lab by following the safety guidelines from your teacher as well as the guidelines discussed in this document.**

**Skill Builder Safety Skills****5. Safety contract**

Keep this contract in your notebook at all times.

By signing it, you agree to follow all the steps necessary to be safe in your science class and lab.

I, \_\_\_\_\_, (Your name)

- Have read the safety guidelines on this Safety Skill Sheet.
- Understand the safety information presented
- Will ask questions when I do not understand safety instructions.
- Pledge to follow all of the safety guidelines that are presented on the Safety Skill Sheet at all times.
- Pledge to follow all of the safety guidelines that are presented on Investigation sheets for every Investigation.
- Will always follow the safety instructions that my teacher provides.

Additionally, I pledge to be careful about my own safety and to help others be safe. I understand that I am responsible for helping to create a safe environment in the classroom and lab

Signed and dated,

\_\_\_\_\_