

Lesson 1.1

Rules to Remember

precautions: safety measures taken ahead of time

ingest: to eat or consume

reaction: the result of mixing two or more chemical substances together

Scientists working in extreme conditions need to take special precautions. Antarctica is the coldest, windiest, driest place on Earth. The world's coldest temperature, -129°F , was recorded there. Researchers can't go out when the temperatures dip that low, but they do venture outside in conditions that are quite dangerous. They wear special clothing that can protect them from frostbite and hypothermia. They must also take survival training classes and bring emergency gear—like food, tents, stoves, and radios—with them when they are working in the field. They have to stay in regular contact with their research station, too, so that someone will know if they are in trouble.

Do you know which practices are and aren't safe in a lab?

A science lab is a place where discoveries can unfold. It's also a place where injuries can occur if the proper **precautions** aren't taken. Follow these guidelines, and you'll stay safe while you're conducting your investigations.

- Before you begin working, make sure that you understand all parts of the procedure or experiment.
- Do not eat, drink, or chew gum in the lab. Even if you're careful, you might accidentally **ingest** something harmful. Before you leave the lab, wash your hands thoroughly with soap and water.
- When you have completed an experiment, check with a teacher or other adult to see how you should dispose of the materials. Chemicals should never be poured down a sink. They could mix and a dangerous **reaction** could take place. Biological materials, like the remains of a dissected frog, should not be placed in the trashcan.
- Wear appropriate protective gear when you are working in a lab. A smock or apron can protect your clothes and keep you from carrying any chemicals outside the lab. Safety glasses should be worn whenever you are working with heat, glass, or chemicals. Gloves can protect your hands from chemicals and heat.
- Do not wear baggy clothing or dangling jewelry in the lab. If you have long hair, it should be tied back. You should also wear close-toed shoes.
- Your five senses are valuable tools of observation in the lab. Use them carefully, though. Never taste anything and don't smell anything unless you are instructed to do so. Observing something visually is fine, but keep a distance of about a foot when you're dealing with chemicals. Also, remember never to look down into a container that is being heated. The substance could splatter and burn you. You could also inhale steam that chemicals produce when they are heated.
- If you are using heated glassware, be sure to keep it away from cool or cold water. The water can cause the hot glass to shatter.
- Conducting experiments can be fun, but you need to make sure that you keep your focus. The lab isn't a place for playing jokes. Distracting a friend might put both of you in danger.



Read each description below. If safe science practices are being followed, write **S** on the line. If they are not, write **US**.

1. _____ Enrique used tongs to remove the glass beaker from the boiling water and set it next to a bowl of cold water beside the sink.
2. _____ A strange smell filled the air, and Olivia leaned closer and sniffed her beaker to see if it was coming from the mixture she had just made.
3. _____ Before Meghan lit the Bunsen burner, she borrowed a rubber band from a friend and put her hair back in a ponytail.
4. _____ Quinn measured quantities of several liquids to use in her experiment while Danny told her about the movie he had seen last weekend.
5. _____ Nico finished examining the contents of the spider's egg sac, so he asked Mr. Hamish how he should dispose of it.
6. _____ Darius had something in his eye, so he put down the test tube he was holding, took out his contact lens, and then replaced it.

Now, explain how each unsafe activity could be done more safely.

7. _____
8. _____
9. _____
10. _____

Write your answers on the lines below.

11. Why is it important to avoid eating or drinking in the lab?

12. Why isn't it a good idea to wear baggy clothing or dangling jewelry in the lab?

13. How are precautions that researchers in the Antarctic take similar to those that students follow in a lab?
