Name: _____ Date: _____

Laboratory Skills: Putting Lab Safety into Practice

Learning goals
After completing this activity, you will be able to …
- Safely heat chemicals and other materials.
- Handle hot materials during an investigation.

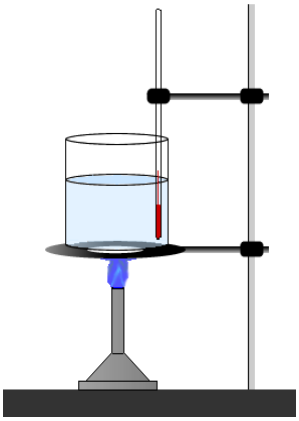
Materials Needed
- 250- or 400-mL beaker
- water
- heat-resistant gloves
- safety goggles
- lab coat or long-sleeved shirt
- Bunsen burner
- ring stand or tripod
- wire mesh square
- thermometer
- thermometer clamp
- stopwatch
- graph paper

Getting Ready
In this activity, you are going to use a heating device to boil water. Which of the following safety precautions do you think you will need to take? (Check all that apply.)

- ☐ Wait for an adult to be present to perform the activity.
- ☐ Avoid practical jokes and horseplay.
- ☐ Keep your work area clean and uncluttered.
- ☐ Avoid eating and drinking anything while doing the activity.
- ☐ Wear safety goggles and an apron or lab coat.
- ☐ Wear latex gloves.
- ☐ Wear close-toed shoes.
- ☐ Pull back any loose clothes and hair.
- ☐ Take off dangling jewelry.
- ☐ Check any electrical cords and gas tubes for damage.
- ☐ Keep any electrical cords or gas tubes out of the way.
- ☐ Use tongs to move the heated beaker.
- ☐ Clean the beaker in an autoclave.
- ☐ Smell the water by wafting it.
- ☐ Seal the beaker before heating it.

Have your teacher check your responses before moving on to the activity.

Procedure



1. Put on goggles and either an apron or a lab coat.
2. Fill the beaker half full with water. In your lab book, record the amount of water in the beaker.
3. Set up a tripod or ring stand over the burner to use as a platform for the beaker. Place the beaker on the platform (use the wire mesh square, if necessary). Then mount the thermometer as shown in the diagram at right using a thermometer clamp.
4. Light the Bunsen burner according to your teacher's instructions. CAUTION: Avoid touching the burner. Use heat-resistant gloves throughout the rest of this lab as necessary.
5. Make a data table in your lab notebook and record the temperature of the water every 30 seconds.
6. Continue recording the temperature until approximately one quarter of the water boils away. Put an asterisk next to the reading you took when the water first starts to boil.
7. Turn the hot plate or Bunsen burner off.
8. Use your graphing paper to graph the change in the water's temperature. You will turn in this graph with your worksheet.
9. Clean up your lab station. CAUTION: The beaker will be hot long after it is removed from the heating device.

Questions

1. What does the symbol at the top of the page mean? _____

   _____

2. Did you have to use the heat-resistant gloves? If so when and how did you use them?

   _____

   _____

3. What steps did you take to turn on your Bunsen burner? _____

   _____

   _____

4. What steps did you take to turn off your Bunsen burner? _____

_____

_____

5. Recall the steps you took to clean up your lab station.

   A. Describe your clean up procedure: _____

   _____

   _____

   B. What waste was produced by this lab? _____

   C. Was this waste hazardous or non-hazardous? _____

   D. How did you dispose of this waste? _____

6. Suppose you received a minor burn while performing this activity. How would you have responded to this accident? _____

_____

_____

_____

7. Look at the graph you made. What did you learn about how water changes temperature when it is heated? _____

_____

_____