Name ____________________ Block ______ Date ________

**Bunsen burner Lab**

**Background:** Often a chemist needs to heat materials. The Bunsen burner is one of the most efficient ways of doing this. Burners come in a variety of designs but most operate on the principle of mixing gas with air to produce a hot flame. In this lab you will learn how to light and adjust a burner flame and to locate the hottest part of the flame.

**Parts of the Bunsen burner:**
- A. Barrel – where gas and air are mixed
- B. Collar – adjust the air intake
- C. Air intake openings – air enters here
- D. Gas Flow Valve – regulates flow of gas
- E. Gas intake tube – gas enters burner from table source.
- F. Base – supports burner

**Materials:**
- Matches
- Bunsen burner
- Ring Stand with Ring
- Wire Screen
- 250mL Glass Beaker
- 100ml Graduated Cylinder
- Thermometer
- Thermometer clamp
- Hot Hands

**Problem to solve**
1. How do you light and adjust a Bunsen burner?
2. Where is the hottest part of a burner flame?

**Procedure:**

**Part 1: Lighting the Burner**
1. Securely connect the hose to the gas outlet. Position burner in center of lab table.
2. Clear the lab table of all flammable objects, secure loose clothing and tie back long hair.
3. Turn the barrel so that the air intake openings are closed, and then open them three full turns.
4. Close the gas flow valve at the bottom of the burner, and then open it three full turns.
5. Put on your goggles, take out a match, and close the box of matches.
6. Strike the match on the box, open the gas valve on the table and light the burner by bringing the lite match up from the base of the burner.
7. Adjust the gas and air so that the flame is pale blue with a dark blue inner cone and about 1.5-2.0cm tall.
Part 2: The Experiment

1. Set up the ring stand, ring, and wire screen as demonstrated by the teacher using height A listed below.
2. Put 100mL of water into the beaker and set it on the wire screen.
3. Position the thermometer clamp so that the thermometer is suspended in the center of the beaker .5cm from the bottom of the beaker.
4. Heat the water for 2 minutes recording the temperature every 15 seconds.
5. Repeat this procedure for height B, C, and D using fresh, room temperature water each time. Use caution – the metal ring and screen will be hot.
6. Record all data.

Height

1. A – Screen is .5cm above top of Bunsen burner (base of flame)
2. B – Screen is touching the tip of inner blue flame.
3. C - Screen is touching the top of flame
4. D - Screen is 2.0cm above the flame

Data chart and questions

Create a data chart to record the time and temperature for each increment of heating. Label all headings and rows.

Questions:
1. Make a detailed sketch of a Tirrill Bunsen burner and label all the parts.
2. The Bunsen burner mixes _________ with __________.
3. When the air intake openings are completely closed the flame has a ________ color.
4. According to your results, where is the hottest part of the flame?
5. Make a sketch of the flame and label the parts.
   a. Base of flame
   b. Tip of inside blue cone
   c. Top of the flame
   d. 2 cm above the flame
6. Correctly graph the data table information. Maximize the graph, label all axes, give it a descriptive title, and make it neat.