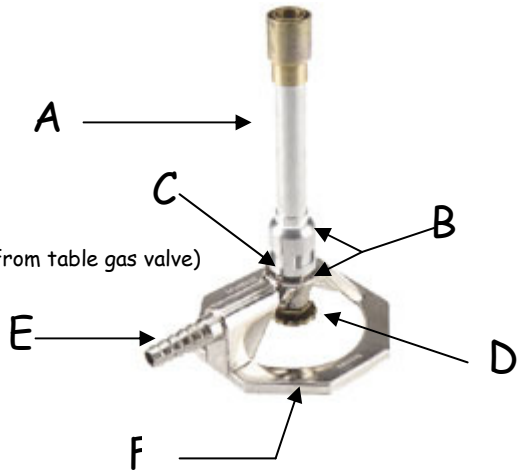
Name _____ Hour _____

Bunsen Burner Lab: Tools of the Physical Scientist

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 (can also be controlled from table gas valve)
E. Gas intake tube - gas enters burner from table source.
F. Base – supports burner



Materials:

spark lighter	Bunsen Burner	support stand with ring	wire screen
gloves	250 mL beaker	100mL graduated cylinder	metal thermometer

Problem to solve:

How do you light and adjust a Bunsen Burner?

Where is the hottest part of a burner flame?

Procedure:

Part 1: Lighting the Burner

1. Connect the hose to the table outlet. Clear the area of all flammable objects (including clothing and your hair!)
2. Turn the barrel so that the air intake openings are closed, and then open them three full turns.
3. Close the gas flow valve at the bottom of the burner, and then open it three full turns.
4. Put on your goggles, open the gas valve on the table and light the burner.
5. Adjust the barrel so that the flame is pale blue with a dark blue inner cone.

Part 2: The Experiment

1. Set up the support stand, ring, and wire screen as shown in the photos (see next page).
2. Position the ring clamp so that the beaker is at the base of the flame (Position A).
3. Put 100mL of water into the beaker and record the starting temperature of the water on your data sheet.
4. Heat the water for 2 minutes recording the temperature every 15 seconds.
5. Repeat this procedure for positions B,C, and D using fresh water each time. Record all data.

Bunsen Burner Lab – Data chart and questions

Position A
(base of flame)

Position B
(tip of inner blue flame)

Position C
(top of flame)

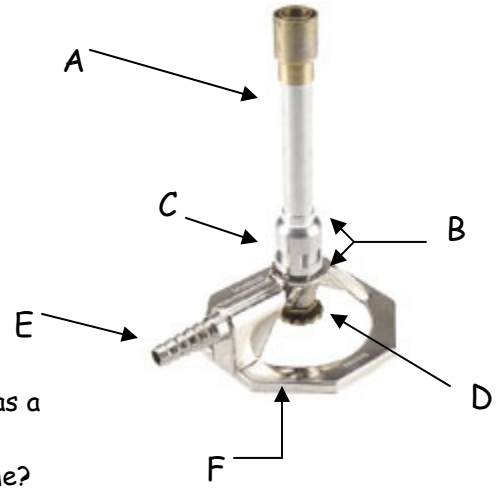
Position D
(2 cm above flame)

Data Chart:

Position	Starting Temp	15 Sec	30 Sec	45 Sec	60 Sec	75 Sec	90 Sec	105 Sec	120 Sec
A									
B									
C									
D									

Questions:

1. Label the parts of the Bunsen Burner.

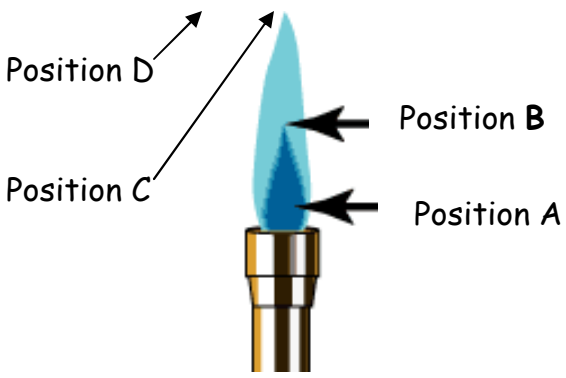


   A. _____
   B. _____
   C. _____
   D. _____
   E. _____
   F. _____

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? Position A. B, C, or D. _____

Parts of the Flame

A. Base of flame
B. Tip of inside blue cone
C. Top of the flame
D. 2 cm above the flame



Bunsen Burner Lab – graphing data

5. Graph your data for all four positions. Label each line.