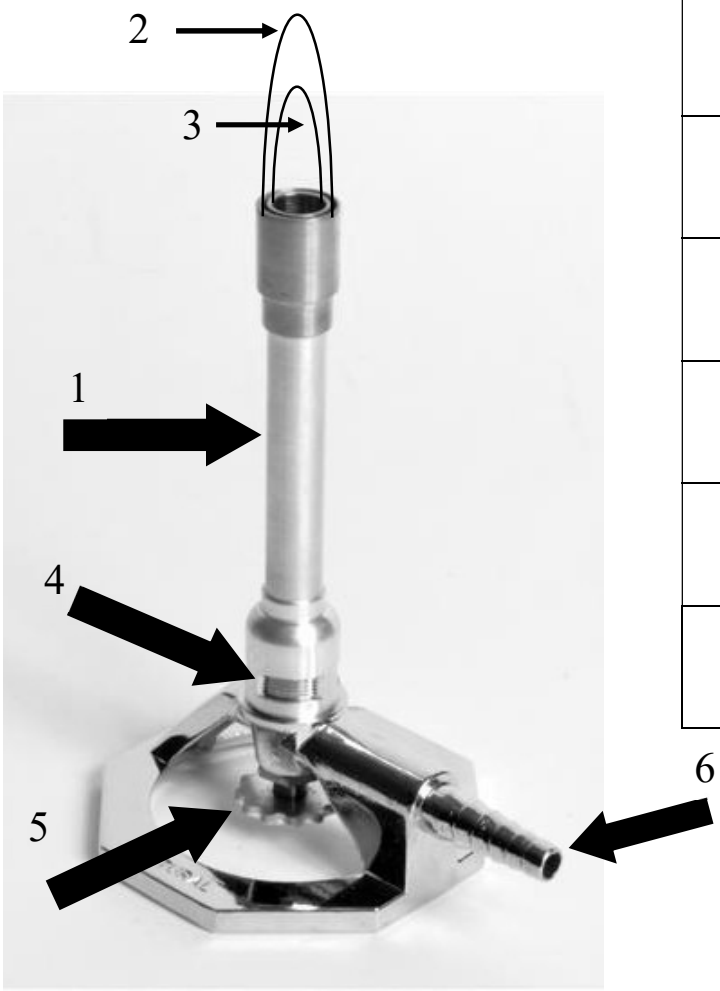
Temperature Lab

Name _____ class ___

40/1200

Objective: To learn how to measure with the centigrade scale thermometers; to learn to us the Bunsen burners safely, to practice temperature conversions, percent error and other calculations.

1	Observe demonstration of how to read a thermometer. To the NEARST 10th degree Centigrade.
2	Learn how to use the sparkers and replace the flints. Look at the 4 photos: closed, open, bad, and good
3	Observe how a Bunsen burner is used safely. Lighting, placement, changing gas and oxygen levels, etc.
4	Practice lighting and lifting the Bunsen burners. Be brave. Fill in the blanks on the photo to help you remember the parts of the Bunsen Burner.



Label the parts to the Bunsen Burner	
	This is the hottest part of the flame.
	This is where the (air) oxygen enters
	This is a hot part of the flame, but not the hottest part.
	This is the control for methane gas $CH_{4(G)}$ (try not to touch this often).
	This is where the methane gas $CH_{4(G)}$ enters.
	This is where the oxygen & methane gases mix.

Centigrade Thermometers

Each line is one degree of centigrade temperature. You must read them to the NEAREST 10th of a degree.

Never lay the thermometers down flat. They must remain vertical or they will form air gaps and we have to throw them away (and I yell).

Don't hold the bottom of a thermometer (unless you are measuring body temperature)

You need to take 4 different temperature measures, to the NEAREST 10th degree centigrade.
DO these in order.

Temperature of	Your measures (to the nearest 10^{th} degree)	Actual values
Air		26.9°C
Tap water		25.3°C
Icy water		1.2°C
Boiling water		101.0°C

The Bunsen burner was invented by a chemist named Professor Robert Bunsen. His invention allowed for safe, clean heat (no soot), and high temperatures.

He's a person, and his invention always gets a capital "B", okay?

This is important to me, and it's correct scientifically to only use a capital "B".

Lab Questions, to be done on loose leaf paper, NO SPIRAL FRILLS allowed. Leave space between the questions so I can make comments if necessary.	
1	What was your percent error for the air temperature measurement? (write a formula, SF count)
2	What was your percent error for the tap water temperature measurement? (write a formula, SF count)
3	What was your percent error for the icy water temperature measurement? (write a formula, SF count)
4	What was your % error for the boiling water temperature measurement? (write a formula, SF count)
5	What is meant by absolute zero? Do not even think of using AI or google.
6	Calculate absolute zero into Centigrade using a formula.
7	Convert the melting point of iron into centigrade using a formula. (try table S for a hint)
8	The freezing point of iron is also 1811 K. Explain that, how can one temperature be the melting point and the freezing point for a substance? Just saying, the freezing point and melting point for H_2O is 0°C or 273 Kelvin.
9	Convert the melting point of zinc into centigrade using a formula.
10	What do the little "(G)" symbols mean in the balanced equation for the combustion of the Bunsen burner gas? $CH_{4(G)} + 2O_{2(G)} \rightarrow CO_{2(G)} + 2H_2O_{(G)}$
11	Change the chemical symbols in question #10 into a WORD equation. Include energy as an additional product.
12	Which temperature is hotter, 74°C or 348 K. Show math that will prove that you are sure of this.

This lab report	includes	points
Cover page	A science title, an optional funny subtitle, and one well worded sentence explaining why you did these lab experiments. Make sure you include your NAME and CLASS PERIOD.	2
Lab handout	6 blanks to be filled in on the first page.	6
White Paper 8½x11 sized	12 Lab questions (six on page 1) and those up above	12
White Paper 8½x11 sized	conclusion: what did you learn, summary of your findings	5
This is due:		25 total points