

PH SCALE: BASICS

Fill out the following table

Substance	pH	Volume (L)	pH (diluted to 1L)	change in pH
Coffee		0.01		
Beer		0.01		
Milk		0.01		
Drain Cleaner		0.01		
Battery Acid		0.01		
Soda Pop		0.1		
Blood		0.1		
Hand Soap		0.1		

1. Describe how the pH changes when you diluted the solution to 1 liter.

2. Was the change in pH the same for each solution? _____

3. If not, why do you think the changes were different for each solution?

4. Based on the pHs of each solution, describe what the different pH values must indicate about the solutions (e.g., what does a low pH number mean, or a high pH).

5. Rank the effectiveness of beer, soda pop, coffee and milk in calming an upset stomach. Explain why you ranked the drinks the way you did.

CONCENTRATION LAB

Create $\frac{1}{2}$ L of a 0.5 mol/L Nickel (II) chloride solution.

Dilute the solution to 1 L. What is the mol/L now? _____

Drain the solution back to $\frac{1}{2}$ a liter. What is the mol/L reading now? _____

Describe how the color of the solution changed as you diluted the solution.

Now choose another substance and repeat the experiment.

Did you observe any differences in the readings with the different substance?

What does your answer tell you about what 'mol/L' measures?

BEER'S LAW

Fill out the following table

Color	Wavelength
Purple	
Blue	
Green	
Yellow	
Orange	
Red	
Brown	

Now fill out this table (set concentration to 200 mM)

Substance	Color	Minimum Transmittance	Maximum Absorbance
Drink mix			
Potassium Dichromate			
Potassium Chromate			
Nickel (II) Chloride			
Copper Sulfate			
Potassium permanganate			

1. Based on the data above, what do you think transmittance means?

2. Based on the data above, what do you think absorbance means?

3. What do you think the relationship is between transmittance and absorbance?

4. How does changing the concentration change the color and readings?

5. Why would concentration affect the readings in the way you described?

OHM'S LAWS

Fill out the following table

Voltage	Resistance	Current (mA)
1 V	500 Ω	
1 V	100 Ω	
1 V	1,000 Ω	
5 V	500 Ω	
5 V	100 Ω	
5 V	1,000 Ω	
2 V	500 Ω	
3 V	500 Ω	
4 V	500 Ω	

1. What is the relationship between Voltage and Current?

2. What is the relationship between Resistance and Current?

3. What is the relationship between Voltage and Resistance?
