Name:_____ Date:_____ Block:____

Conversions & Graphing and Analyzing Data Homework

Section 1: Conversions

* IF No Decimal point

Part A: Convert the following measurements into scientific notation.

1000 000 M = 1×10^6 M

1) 0.0008 m

8×10^{-4} m

2) 1,000,000. M

1.000000×10^6 M

Part B: Convert the following measurements into standard notation.

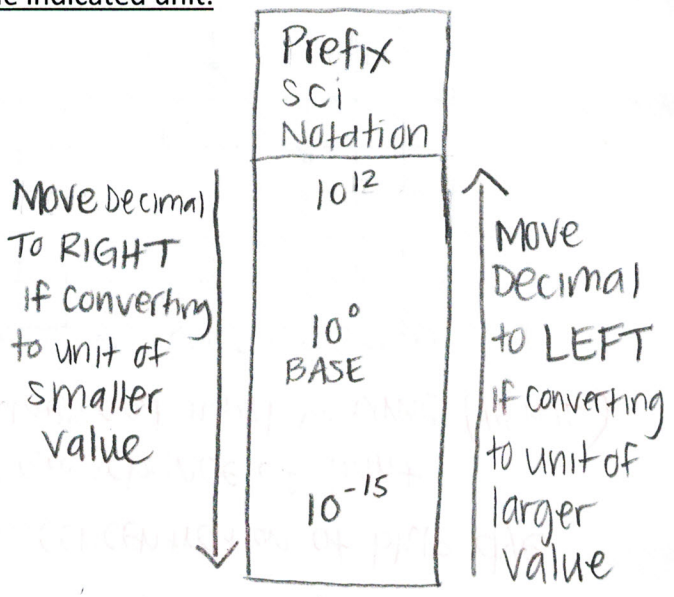
3) 2.2×10^5 m positive exponent = BIG value

220000 m

4) 2.2×10^{-5} m negative exponent = SMALL value

0.000022 m

Part C: Convert the following measured quantities into the indicated unit.



5) 5.2 cm (10^{-2}) to 52 (mm, 10^{-3})

5.2 → Right one

6) 3 kL (10^3) to 3000 (L, 10^0)

3. → Right three

7) 1.60 mL (10^{-3}) to 1600 (µL, 10^{-6})

1.60 → Right three

8) 12.75 Mm (10^6) to 12750 (km, 10^3)

12.75 → Right three

9) 1 210 002 ng (10^{-9}) to 1.210002×10^{-6} (kg, 10^3)

Left twelve 1210002. = 0.000001210002 kg = 1.210002×10^{-6} kg

10) 151 mg (10^{-3}) to 0.151 (g, 10^0)

Left three 151.

Section 2: Graphing and Analyzing Data

Albert pours two drinks: a glass of water and a glass of blue Gatorade into identical cups. He notices that when he shines a flashlight on the side of each glass more light passes through the water than the blue Gatorade. Albert thinks that the blue dye in the Gatorade absorbs some light causing less light to exit the solution. He hypothesizes that if the blue dye concentration (amount) is increased then the amount of light absorbed by the solution will increase. Albert designs an experiment to test his hypothesis by creating different mixtures of water and blue dye. Each mixture is placed into identical test tubes and has a total volume of 10 mL, but a different concentration (amount) of blue dye. He then uses a flashlight to shine light through each solution and measures the amount of light that is absorbed by each solution. His results are in the data table shown below. Note: the unit to measure concentration (amount) is "μM" and absorbance is "A".

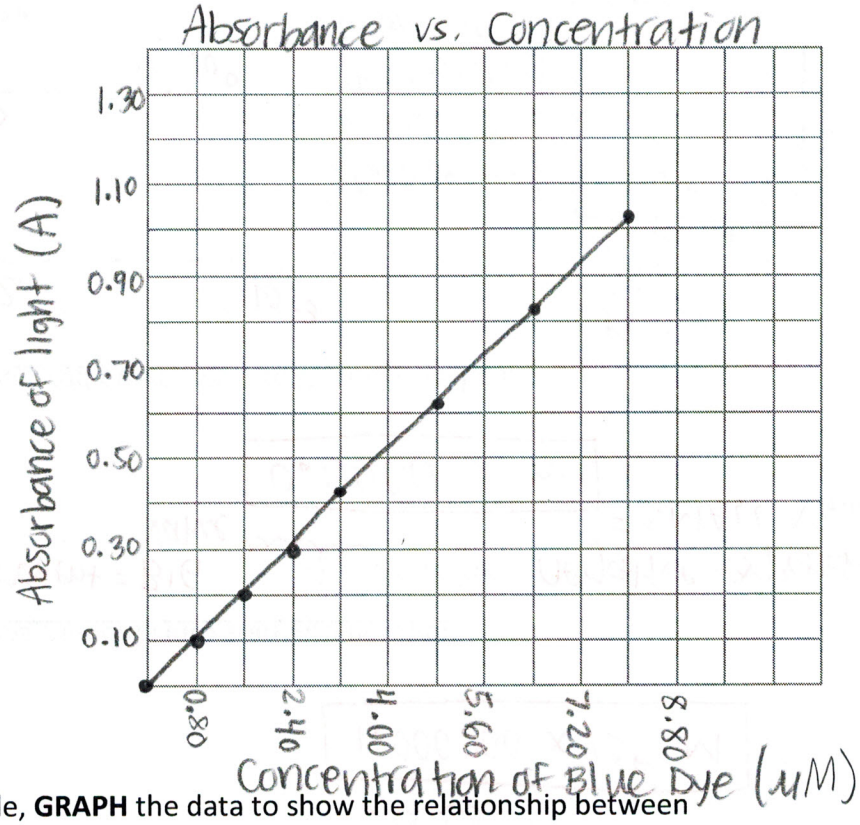
Part A: Experimental Design

1. Identify the independent variable of the experiment. concentration of blue dye
2. Identify the dependent variable of the experiment. absorbance of light
3. Identify the controls of the experiment. test tubes and total volume (10 mL)

Data Table:

Concentration of Blue Dye (μM)	Absorbance of Light (A)
0.00	0.00
0.80	0.10
1.60	0.20
2.40	0.30
3.20	0.41
4.80	0.61
6.40	0.82
8.00	1.02

Independent X-axis Dependent Y-axis



Part B: Data Analysis

4. Using the data in the table, **GRAPH** the data to show the relationship between concentration and absorbance.

5. Are concentration and absorbance directly or inversely proportional? Explain your reasoning.
Concentration and absorbance are directly proportional because as concentration increases, absorbance also increases

6. Should Albert accept or reject his hypothesis? Justify your answer with the analysis of data obtained from the experiment. Accept the hypothesis. The data supports that concentration and absorbance are directly proportional. Thus, more blue dye results in more absorption of light.