Carbon Dioxide in Seltzer Lab name:

40/1200

Determining the Concentration of CO_2 in Seltzer

Objective: To determine Molarity of the CO_2 in seltzer,
and the Parts Per Million of CO_2 in seltzer, and
finally, the percent by mass of the CO_2 in seltzer.

READ THIS ALL FIRST then do what it says

· Get a CLEAN and dry a 100 mL beaker. Clean it if necessary, dry it well.
· MASS the BEAKER with a STIRRING MAGNET dry!
· POUR about 80 to 120 mL of seltzer CAREFULLY (lots of important bubbles) into the beaker on the scale.
· IMMEDIATELY record the total MASS of the seltzer, beaker and magnet
· Put beaker onto the stirring machine on low, slowly increase the spin speed, but DO NOT SPILL A DROP.
· DO NOT RUSH — stir this up for 25-30 minutes
· Slow down, then turn off the stirring magnet before picking up the beaker.
· Mass the beaker at the end, which is just water now (all CO_2 has exited)
· Remember that the density of water = 1.0 g/mL the mass of water in grams = mL of water too
· Wash beaker and magnets with SOAP, set aside to drip dry please.

Step	DATA	Measurement
1	mass beaker + stirring magnet dry (BEFORE)	
2	mass beaker + stirring magnet + seltzer at START	
3	mass of the seltzer ONLY	
4	mass beaker + stirring magnet + WATER (END)	
5	Calculate the mass of water ONLY	
6	Calculate the volume of water	
7	Calculate the mass of MISSING CO_2	

1.6 x 10^1 Lab Questions, show all work.

1. Calculate the MOLARITY of CO_2 in your seltzer. (You MUST show a formula and math)
2. Calculate the PPM of CO_2 in your seltzer. (You MUST show a formula and math)
3. Calculate the % by mass of CO_2 in your seltzer. (You MUST show a formula and math)

4. The actual Molarity of CO_2 in seltzer is 0.14 M. What is your percent error?
5. The actual value for PPM of CO_2 in seltzer is 5800 PPM. What is your percent error?

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6. How many grams of cobalt (II) nitrate are in 49.0 mL of 3.25 M $Co(NO_3)_{2(AQ)}$?

7. A 4,250. mL solution of sodium hypochlorite contains 395.0 grams of solute. This is the white powder that most non-chemists call "chlorine" that they use in their pools. What is this solution's molarity?

8. Would $NaClO_{(AQ)}$ conduct electricity? Explain why or why not?
9. You have 3.25 M $NaClO_{(AQ)}$ stock solution. How do you prepare 250.0 mL of 0.975 M from it? You MUST use a formula, do the math, and, DRAW a diagram to show how to mix this solution.

10. How would you prepare 250.0 mL of a 0.975 M $NaClO_{(AQ)}$ from scratch? You MUST use a formula, do the math, and then, DRAW a diagram to show how to mix this solution.

11. You have 4.00 M $CaCl_{2\,(AQ)}$ in stock. How do you prepare a 125.0 mL of 2.25 M solution from it? You MUST use a formula, do the math, and then, DRAW a diagram to show how to mix this solution.

12. Explain why you cannot prepare a 1.2 M $NH_4OH_{(AQ)}$ using a 0.95 M $NH_4OH_{(AQ)}$ stock solution.
13. Skip.

14. What is the molarity of a saturated solution of potassium chloride at 30°C ?

15. If your saturated solution of KI at 5°C is warmed up to 15°C, does the Molarity of this solution change? Math is always okay, but it's not necessary here.

16. If you have a 100 mL saturated solution of $NH_{3(AQ)}$ at 10°C and warm it up to 90°C, does the molarity of this solution change? Math is always okay, but it's not necessary here either.

17. What is the PPM of Na^{+1} in a 500. mL solution containing 0.00336 grams of Na^{+1} cations?

	This lab report requires	points
1	Cover page + introduction sentence	2
2	Filled in data table	6
calculations	16 problems	32
This lab is due on:		40