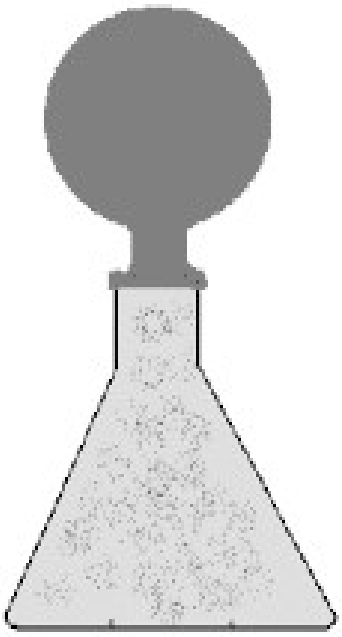
Review Lab #2 name



This lab is long and packed with material for you to review.
It will count for 30 points, but only 20 minutes of lab time.

The experiment part is great fun, and great math. The rest is just math practice.
Goggles on in lab.
Do all work NEATLY, on loose leaf paper, and in order!

When you have a tummy ache you might take Alka-Seltzer brand medicine to neutralize the acid in your stomach. Stomach acid (HCl) is very strong, we'll use the same kind of acid but a weaker concentration.

Alka Seltzer's main ingredient is sodium hydrogen carbonate.
When combined with hydrochloric acid, the products are water, sodium chloride and carbon dioxide gas. Fill in the data table as you go.

A	Carefully add acid into flask	~30 mL
B	Mass of your empty balloon.	grams
C	Mass of 2 Alka Seltzer tablets and the balloon.	grams
D	Mass of just Alka Seltzer tablets (C - B =)	
E	Mass of system: acid flask with balloon attached, before reaction	
F	Mass of systems after reaction, after you cut a hole in balloon, no CO_2	
G	Mass of missing CO_2 (E - F =)	

25 Questions for <u>after</u> you have cleaned up.

1. Write the WORD equation for the reaction between the acid and base.
2. Write the Balanced Chemical Equation for this reaction, with ALL PHASES.
3. How many grams of CO_2 formed?
4. Calculate the number of grams of sodium hydrogen carbonate in the Alka-Seltzer, assume 95% pure.
5. Calculate the percent composition by mass of sodium in sodium hydrogen carbonate.

6. How many grams of sodium are in the two tablets of Alka Seltzer?
7. If you have 137.9 grams of $NaHCO_3$ (and sufficient acid to react) how many grams of $CO_{2(G)}$ would form?
8. How many molecules of CO_2 would form in question 7 just above?
9. Write the complete Law of Conservation of Mass (AKA Law of Conservation of Matter) in proper English.
10. The chemical formula for chlorophyll is: $C_{55}H_{72}MgN_4O_5$ What is the molar mass of chlorophyll?

11. Calculate the percent composition by mass of carbon in chlorophyll too.
12. Balance the chemical reaction <u>with phases</u> $Ca_{(S)} + Na_2CrO_{4(AQ)} \rightarrow$
13. skip this one.
14. What kind of chemical reaction is question number 12?
15. Rewrite this statement (filling in all blanks) The ___ replaces the ___ in solution, and the ___ is the spectator ion in the calcium and sodium chromate reaction above.

16. Write the ground state electron configuration for an atom of krypton, and the excited state as well.
17. If you were to excite this potassium by heating it up, it would give off spectra of a unique color. Explain how refractive lenses would let you observe potassium's spectra lines. Clearly explain <u>when</u> the spectra is produced, and why the spectrum of potassium is different than the spectrum of sodium or carbon dioxide.
18. Which liquid on table H has the strongest intermolecular attractions at 90 kPa? <u>Explain</u> how you know.
19. Which liquid on table H has the highest vapor pressure at 60°C? Explain how you know that!
20. At 20 kPa and 65C on table H, which of the 4 compounds are liquid, which are gases?

Vestallium isotopes	Atomic mass	Naturally occurring proportions
Ve-123	122.95 u	55.85%
Ve-124	123.89 u	32.81%
Ve-125	124.96 u	?

21. What's the average weighted atomic mass of this make-believe element? ROUND to "5 SF".

22. How many protons, neutrons and electrons are in the <u>most common isotope</u> of indium?
23. Properly name these compounds: $(NH_4)_2CrO_4$ $Al(CN)_3$ $NaClO$ $Pd_3(PO_4)_4$
24. Properly name these compounds: CS_2 SF_6 NI_3 CBr_4
25. Convert 799.0 mmHg into kPa.
26. What phase is Magnesium and sodium at 875 Kelvin?
27. An unknown metal has mass of 546 grams and volume of 81.74 cm^3. What element is it most likely to be?

26 points each for the multiple choice, 4 points for a nice cover page with title and intro sentence.
There is no conclusion for this lab report.