

name: _____



Purpose: to review Moles, Stoichiometry, Thermochemistry, Density, Temperature Conversions, Types of Chemical Reactions, Balancing Equations, phases, and other Basic Chemistry topics. Please do parts 3, 4 and 5 in any order. You must wear goggles once we pass the two demos.

Part 1 and 2 are Teacher Demonstrations that you do NOT want to miss.

Part 1 Chemical Reactions - Teacher Demonstration

Into a glass tube we'll place about 15 mL potassium chromate solution. Into that we place a small test tube with about 5 mL silver nitrate solution. We seal the flask.

1. What is the mass of the system before we mix the solutions? _____
2. What happens when the tubes are INVERTED? _____
3. What is the mass of the system after the reaction? _____
4. What type of chemical reaction was this? _____
5. Write a word equation for this reaction:

6. Balance this chemical reaction with phases
_____ + _____ → _____ + _____
7. List THREE of 6 TOPIC-B evidence were present for this chemical reaction, which 3?

8. Write in complete sentence the complete LAW OF CONSERVATION OF MATTER:

Part 2 Teacher Demonstration - Thermo-chemistry

Into a beaker we place 205 mL deionized water, measure its temperature to the 10th° C. Into this water we put 18.00 grams of ammonium chloride salt. CHECK TEMP.

9. Write the formula for ammonium chloride _____
10. What was the ΔT for the water? _____ (HOTTER or COLDER?)
11. This reaction was (exo or endo) _____ thermic. The ΔH is ____ (+ or -)
12. According to Table I, one mole of NH_4Cl absorbs _____ kJ of energy as it ionizes in the H_2O .
13. You can skip this one!
14. Determine how many kJ were absorbed from the water in our reaction using 18.00 g NH_4Cl . This is NOT a $q = mC\Delta T$ problem, use a ratio.

15. Convert the kilo-Joules from question 14 into calories and Calories. (show work)
_____ calories, which equals _____ Calories

16. Write an equation that shows the dissociation of ammonium chloride into ions as it dissolves into water. Include energy as a REACTANT of PRODUCT (which ever is correct)

Part 3. MOLES with Metals: Take one piece of metal, circle which one you chose: LEAD or NIOBIUM.

What is the mass of your metal. _____g.

17. What is the molar mass of this element? _____

18.....What is the ATOMIC mass of this element? _____

19. Calculate how many atoms of metal are present in this piece of metal.

20. What is the density of this metal? _____

21..... Calculate the volume of your piece of metal? _____

19. How many protons, electrons, and neutrons are in ONE ATOM of this metal?

_____ protons, _____ electrons, and _____ neutrons

20. Name the bonds that keep these metals atoms connected in this one piece: _____

Part 4 STOICHIOMETRY

Obtain 0.15 and 0.30 grams of magnesium metal bits. Put those quantities of the metal into the two balloons. Obtain 2 small flasks and put 5 squirts from an eyedropper of 3.0 M hydrochloric acid into each. HOLD THE FLASKS while your partner carefully pulls the balloons onto the flasks, without dropping the Mg into the acid. Squeeze out as much air as you can from the balloon. Drop the metal into the acid for both flasks at the same time. Observe.

21. Write the balanced chemical reaction with phases.

22. What type of reaction were these? _____

23. Are the balloons different sizes at the end of the reactions? Should they be?

24. Describe how we could test this gas to find out if it's one of these gases: CO₂, O₂, or H₂.

25. How many moles of hydrogen should form in the smaller balloon? _____ moles

26. How many molecules of H_2 should form in the larger balloon? _____ molecules

Part 5 — MOLES with Non-Metals

Measure out 7.15 grams of KCl and place onto a small watch glass.

27. How many moles do you have of KCl? _____

28. How many formula units of KCl do you have? _____

29. Calculate the percent composition by mass of K and Cl in this compound. Show work.

30. In YOUR sample of 7.15 g KCl, how many grams are potassium, and how many grams are chlorine?

31. Draw the proper LEWIS DOT DIAGRAM for a
potassium atom chlorine atom KCl as an ionic compound.

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This lab experience explores many aspects of chemistry, all of them are review. If you hesitated on any of the math, or the formulas, or the definitions, let this fact into your mind and evaluate it.

Chemistry is a difficult, long, complex course. The material is not endless, but it's close to that. If you need to practice, then that is what you should do. If you ignore reality, it will bite you and leave a nasty scar. Your life is not about grades in boxes, it's about growing as a student and as a person. It's about meeting your obligations: to me, to your parents, and mostly to yourself.

No one should expect that you do more than you are really capable of, but you should not lower the bar as to what heights you can reach to. Life is a delicate balance between competing desires: yours, your parents, and your teachers. How you deal with all of these demands will shape you as a person for the rest of your life.

Your whole life literally depends upon how well you do in this course, and on this assignment. You need to do the work. You need to think, and to work hard at each of these problems. You need to be the best person that you can be. Collaboration should not include copying work of others. Numbers in boxes are less valuable than you think.

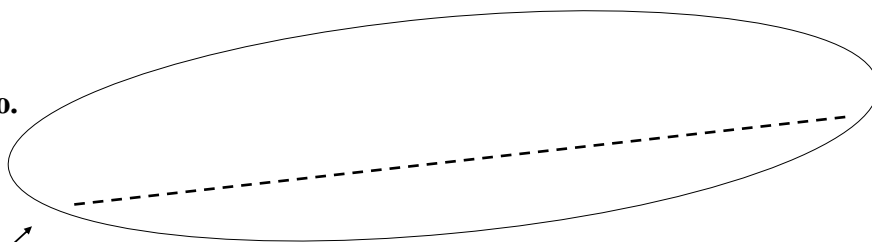
In Hollywood, mis-takes are common. (Directors often say: "That was good. Now let's do take two.")
Give yourself as many re-takes as you need. Movie stars do it, why not you?

If you can't figure it out yet, pick yourself up, dust yourself off, start again.

Mistakes, obviously, show us all what needs improving.
Without mistakes, how would we know what we had to work on?

To avoid situations in life in which you might make a mistake may be the biggest mistake of all.

I read this page, and I thought about it too.



This classwork	includes	Point Spread
Cover page	Title and intro sentence	1
Answer all questions 1—32	Show work whenever necessary on loose leaf paper, neatly	31
Signature above	Your signing your name that you have read this whole page, and given it more than a moment's thought.	1
End notes	There's no conclusion, instead I'd like a note to the me about you and chemistry. How is it going for you, what do you think you still need help with, what did you like or not like about our course, room, teacher, teaching style, etc. <u>Be polite, but be honest.</u>	0