

**Worksheet 1    Due beginning of class Wednesday February 11, 2004**

This worksheet is entirely optional.

Please consult our syllabus regarding how the worksheets are graded. Should you decide to do the worksheet, it is due at the beginning of class Wednesday Feb 11, 2004. No late worksheets will be accepted. Please observe the following format for the worksheet assignments:

Use a Bluebook.

Loose-leaf pages, or spiral notebooks are not acceptable and will not be graded. Stapled papers will not be graded.

Write your Name (last name in CAPS), sec. no., date, and WS1 on the cover. Please print in large letters, we will be handling several hundred bluebooks, your name and section no. must be easy to read.

Do not rewrite the questions.

Simply write the question number and provide your worked out solution. Show all of your work. No work = No credit. Show answers to correct significant figures and use units where appropriate. Use scientific notation where appropriate. Clearly box-in your answers. Leave some space between problems.

This is a worksheet and it is assumed that there may be some trial and error in your work.

There is no need to erase and recopy work, simply draw an "X" or line thru what you do not want graded, and carry on.

Neatness counts.

Your work must be legible and neat. If I can't read it, it will not be graded. If you turn in garbage, it will be placed in the waste basket where it belongs.

The following websites may be helpful to you in doing some calculations and checking your work:

<http://hamers.chem.wisc.edu/chapman/other/chem.html>

<http://www.shef.ac.uk/chemistry/chemputer/percent.html>

1. If the density of lead is  $11.34 \text{ g/cm}^3$ , what is the volume in  $\text{cm}^3$  of 65.0 g of Pb?
2. Write this number in scientific notation:  $7530.8 \times 10^8$ .
3. How many significant figures are there in the number 0.0012984
4. Give the proper prefixes describing: one trillion of and one trillionth of
5. Describe the following as either an element, a compound or a mixture and give the reason why:  
aluminum foil, a stone, a penny, wood, vinegar, air, milk, glass
6. How many milligrams are there in 2.72 kilograms?
7. Express  $268 \text{ in}^3$  in units of L.
8. A certain bleach is found to contain 5.0% sodium hypochlorite ( $\text{NaOCl}$ ) by mass.
  - a) How many lbs of bleach can be made from 10.0 lbs of  $\text{NaOCl}$ ?
  - b) How many gallons is this if the bleach has a density of  $1.07 \text{ g/mL}$ ?

9. 95.6 g of Mg is how many mols of Mg?
10. How many O atoms are there in 27.8 grams  $O_2$ ?
11. Describe the differences if any between a proton, a neutron, and an alpha particle.
12. What determines the mass number of an atom?
13. Find % H in ammonium phosphate,  $(NH_4)_3PO_4$ .
14. Find the number of moles of oxygen atoms, O, in 65.85 g copper sulfate pentahydrate,  $CuSO_4 \cdot 5 H_2O$ .
15. Determine the molar mass of  $Al(NO_3)_3$ .
16. What mass of  $BaF_2$  contains  $45.8 \times 10^{19}$  atoms of fluorine, F.
17. A compound is 20.0% H and 80.0% C. What is its simplest formula?
18. A compound contains 1.8% H, 42.0% O, and 56.0% S. What is its simplest formula?
19. Write the balanced chemical reaction equation for the reaction of elemental sodium with water to form aqueous sodium hydroxide and hydrogen gas.
20. Write the balanced chemical reaction equation for the reaction of solid iron(III)oxide and hydrogen gas to form elemental iron and liquid water.
21. If 2.5 g of Mg metal reacts with 435 mL of 0.250 M  $HCl$  solution, what mass of  $MgCl_2$  will be produced? Hydrogen gas is also produced.
22. How many moles of  $BaCl_2$  are there in 375 mL of 1.24 M solution?
23. 5 g of CuS produces what mass of  $H_2SO_4$  ?  
$$2 CuS + 3 O_2 \rightarrow 2 CuO + 2 SO_2$$
$$2 SO_2 + O_2 \rightarrow 2 SO_3$$
$$SO_3 + H_2O \rightarrow H_2SO_4$$
24. A mixture of 0.0358 g  $H_2$  and 0.0128 g  $O_2$  react in a closed container. How many grams of water can be formed?
25. When 35.7 g of methane and 84.0 g of chlorine gas react with 80.0% yield, what mass of chloromethane ( $CH_3Cl$ ) forms? Hydrochloric acid also forms.
26. Methane and ethane are the two simplest hydrocarbons. What is the mass % C in a mixture that is 30.0% methane and 70.0% ethane?
27. How many sodium ions are there in 2.86 mols of sodium carbonate?

Please remember to show your work. Good Luck! Come by office hours if you have questions.