CHM151: CHM151 Group work for Exam 1. Break into groups and work each of the following in preparation for the upcoming exam. You won't have time to finish all of the problems, so you may work some of each type and then work in groups outside of class to finish.

1. Write down the name of each team member that you are working with.

2. Copper makes up 1.1×10^{-4} percent by mass of a normal healthy human being. How many grams of copper would be found in the body of a person weighing 150 lb? (1.0 kg = 2.2 lb)
   a. 0.00075 g   b. 0.075 g   c. 0.75 g   d. 7.5 g   e. 36 g

3. The sum 3.834 + 2.02 + 4.71630 + 238.1621 + 186.2 expressed to the proper number of significant figures is:
   a) 435 b) 434.9   c) 434.93   d) 434.932   e) 434.9324

4. How many millimeters are there in 75 yards?
   a) 6.9×10^3 mm   b) 2.3×10^4 mm   c) 9.1×10^2 mm   d) 6.9×10^4 mm
   e) 1.1×10^4 mm

5. How many milliliters are there in 1.0 microliter?

   a) 1.0×10^{-1} mL   b) 1.0×10^{-2} mL   c) 1.0×10^{-3} mL
   d) 1.0×10^{-4} mL   e) 1.0×10^{-5} mL

6. The 1970 standard established by the U.S. government for carbon monoxide emission for automobiles limited exhaust to 23.0 grams of CO per vehicle-mile. Assume that in a given metropolitan area there are 82,700 automobiles, driven an average of 13.5 miles per 24-hour period. How much CO (in tons) could legally be discharged into the area's atmosphere per day?

   a) 270 tons/day   b) 0.155 tons/day   c) 28.3 tons/day
   d) 0.0535 tons/day   e) 39.0 tons/day

7. What is the area in square millimeters of a rectangle that is 8.632 cm long and 26.41 mm wide?

   a) 2280 mm^2 b) 3.060 mm^2 c) 22.80 mm^2 d) 0.3060 mm^2 e) 30.60 mm^2

8. What volume is occupied by 14.3 g of mercury? Density = 13.6 g/mL.

   a) 37.2 mL   b) 0.236 mL   c) 193 mL   d) 1.05 mL   e) 4.82 mL

9. What is the formula weight of $Fe(NH_4)_2(SO_4)_2 \cdot 6H_2O$?

   a) 392 amu   b) 384 amu   c) 412 amu   d) 376 amu   e) 436 amu

10. How many moles of C_3H_8 are there in 450 grams of C_3H_8?

    a) 3.84 mol   b) 0.879 mol   c) 10.2 mol   d) 1.44 mol   e) 12.1 mol

11. How many atoms of hydrogen are there in 7.6 g of C_6H_6?
    a) 0.6×10^{23} b) 5.8×10^{22} c) 2.5×10^{23} d) 3.5×10^{23} e) 4.2×10^{23}

12. How many millimoles are contained in 0.500 grams of Na_2HPO_4?
    a) 3.52 mmol   b) 0.284 mmol   c) 0.071 mmol   d) 1.48 mmol   e) 0.047 mmol

13. What is the percent by mass of sulfur in $Al_2(SO_4)_3$?
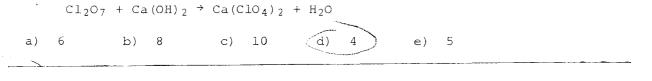   a) 9.38%   b) 18.8%   c) 24.6%   d) 28.1%   e) 35.4%

14. The number of protons in the nucleus determines the
    a. atomic mass.   b. atomic number.   c. mass number.
    d. number of neutrons.   e. number of isotopes.

15. How many neutrons are there in the nucleus of an atom of $^{19}_{9}F$?

    a. 9   b. 10   c. 18   d. 19
    e. 28

16. The following species, $_{17}Cl^-$, $_{18}Ar$, and $_{19}K^+$, all have the same number of
    a. protons.   b. electrons.   c. neutrons.   d. isotopes.   e. nucleons.

17. Balance the following equation with the smallest whole number coefficients. Choose the answer that is the sum of the coefficients in the balanced equation. Do not forget coefficients of "one".

        $C_7H_{16} + O_2 \rightarrow CO_2 + H_2O$

    a) 23   b) 27   c) 29   d) 30   e) 32

18. Balance the following equation with the smallest whole number coefficients. Choose the answer that is the sum of the coefficients in the balanced equation. Do not forget coefficients of "one".

        $Cl_2O_7 + Ca(OH)_2 \rightarrow Ca(ClO_4)_2 + H_2O$

    a) 6   b) 8   c) 10   d) 4   e) 5

19. A compound was found to be 40.0% carbon, 6.7% hydrogen, and 53.3% oxygen by weight. What is the empirical formula of the compound?

20. What mass of silver chloride can be made by reaction of 4.22 g of silver nitrate with 7.73 g of aluminum chloride? Be sure to balance the reaction.
        $AgNO_3 + AlCl_3 \rightarrow Al(NO_3)_3 + AgCl$

21. Be sure to study the assigned homework problems, Empirical and molecular formulas, Balancing equations and stoichiometry, bring your homework notebook to class.
        Green Scantron

Answers: 2-b, 3-b, 4-d, 5-c, 6-c, 7-a, 8-d, 9-a, 10-c, 11-d, 12-a, 13-d, 14-b, 15-b, 16-b, 17-b, 18-d, 19. CH_2O, 20. 3.56 g