Name: KEY ____ / 20 Pts.

Chemistry Honors Worksheet: Formulas of a Compound

1.
a.) moles — The subscripts in a chemical formula represent the ratio of (moles / mass) in a compound
b.) CO — Which compound has the greatest percentage of carbon? (CO, CO_2, $PbCO_3$)
c.) CH_4 — What is the empirical formula of a compound that contains 0.2 moles of C and 0.8 moles of H
d.) 83 g/mol — Calculate the molecular mass of a compound if 0.02461 moles has a mass of 2.05 g.
e.) Same — The % composition of an empirical formula is (more / less / the same) than/as its molecular formula.
f.) one — How many moles of V are indicated in one mole of the compound $V(C_2O_4)_2$?
g.) 1×10^{24} atoms — A beaker of water contains 2×10^{24} atoms of H, how many atoms of O are also in the beaker?
h.) 6.02×10^{23} — 1 mole of a molecular compound has a mass of 165 grams. How many molecules are there?
i.) 0 % — Fool's Gold is iron pyrite, FeS. What is the percentage of gold in a 1.0 gram sample of fool's gold?

2. The pesticide DDT has been banned in the United States since 1962. This compound has a formula $C_{14}H_9Cl_5$. Answer all questions refering to DDT. Note: Use 35.5 g/mol for Cl — 709.5 g/mol

a.) molecular — Is this compound ionic or molecular?
b.) 5.2×10^{15} — How many molecules of DDT are in a 6.1×10^{-6} g sample?
c.) 1.53×10^{19} atoms H — How many atoms of H are in 2.00 mg of DDT?
d.) 7.51 g Cl — How many grams of Cl are contained in 10.0 grams of DDT?
e.) 7.84×10^{21} atoms C — If a sample 5.04×10^{21} atoms of H, how many atoms of C would there also be?
f.) 2.97×10^{20} atoms C — How many atoms of C are in a 25.0 mg of DDT?

3. A compound of tantalum, Ta, and oxygen was produced in a lab by heating tantalum in a crucible. The data was collected:

Mass of crucible:	24.22 g	> 1.92 g Ta	0.0106 mol Ta
Mass of crucible and tantalum:	26.14 g		
Mass of crucible and tantalum oxide:	26.56 g	> 0.42 g O	0.02625 mol O

a.) Calculate the percent composition of the compound. 82.1% Ta 17.9% O
b.) What is the empirical formula of this compound? $TaO_{2.5}$ — Ta_2O_5
c.) Is this compound ionic or covalent? IONIC
d.) Name this compound: Tantalum(V) oxide * Need Roman Numerals!!!

4. Determine the empirical formula of the following compounds:
a.) 63.0g Rb, 5.90g O — Rb_2O
b.) 4.95mg Th, 1.37mg S — ThS_2
c.) 2.13g Na, 2.32g As, 1.98g O — Na_3AsO_4
d.) 32.8% Cr, 67.2% Cl — $CrCl_3$
e.) 58.0% Rb, 9.50%N, 32.5% O — $RbNO_3$