

## VIII. The Mole

1. Calculate the number of moles in:
  - a) 80. grams of zinc, Zn.
  - b) .58 grams of lead, Pb.
  - c)  $3.47 \times 10^{-5}$  grams of vanadium, V.
  
2. Calculate the number of atoms in:
  - a) .23 mole copper, Cu.
  - b) .23 mole gold, Au.
  - c)  $7.76 \times 10^{-3}$  mole neon, Ne.
  
3. Calculate the number of atoms in:
  - a)  $7.8 \times 10^4$  grams of bromine, Br.

- b)  $4.5 \times 10^{-5}$  grams of krypton, Kr
4. Calculate the number of grams in:
- a)  $9.7 \times 10^{41}$  atoms of lithium, Li.
- b)  $5.8 \times 10^{-4}$  mole calcium, Ca.
5. Calculate the number of :
- a) molecules of sucrose,  $C_{12}H_{22}O_{11}$ , in  $2.1 \times 10^{-8}$  moles of sucrose.
- b) molecules in  $3.87 \times 10^4$  grams of water,  $H_2O$ .
- c) moles of methane in  $4.7 \times 10^{27}$  molecules of methane,  $CH_4$ .
- d) grams of C in 17.3 grams of nonane,  $C_9H_{20}$ .

e) atoms of O in .00517 grams of glucose,  $C_6H_{12}O_6$ .

f) atoms of H in  $5.6 \times 10^4$  moles of sucrose,  $C_{12}H_{22}O_{11}$ .

6. Calculate the number of: (Note-  $CuCO_3$  is an ionic compound, so we do not refer to molecules of  $CuCO_3$ . Instead, you can refer to a “formula unit” of  $CuCO_3$ .)

a) grams of Cu in 47.3 grams of  $CuCO_3$ .

b) moles of Cu in 47.3 grams of  $CuCO_3$ .

c) moles of Cl in 2.17 moles of  $AlCl_3$ .

d) grams of Cl in 2.17 moles of  $\text{AlCl}_3$ .

e) grams of H in .015 grams of  $\text{H}_3\text{PO}_4$ .

f) atoms of O in 2.007 grams of  $\text{H}_3\text{PO}_4$ .