**Chem 1114 Fall 2012**

**More mole-Mole (body parts) problems with solutions**

Aspirin has the empiric formula: **C9H8O4** and a molecular weight of 180 g/mol.

Given the atomic masses: C=12 g/mol H=1 g/mol O=16 g/mol

1. How many moles of O are present in 720 grams of aspirin ?
2. How many grams of C are combined with 6 moles of O in aspirin ?
3. How many grams of aspirin are present if an aspirin sample contains 32 grams of H ?
4. How many moles of C are combined with 1.204\*1024 atoms of O ?
5. How many atoms of H are combined with 720 grams of C in aspirin ?
6. How many grams of O are combined with 360 grams of C in aspirin ?
7. How many moles of H are present in a sample of 4.816\*1024 molecules of aspirin ?
8. ow How many moles of aspirin are present if a sample contains 64 grams of O ?
9. HoHowHhHjHow many grams of aspirin are present in a sample containing 30 grams of H ?
10. How many atoms of H are combined with 3.01\*1022 atoms of C ?

ANSWERS

1. 720 g asp \* 1 mol asp/180 =4 mol asp

Mol O/mol asp = 8/1= x/4=> x=mol O=32 mol O

2. Mol C/mol O= 9/4= x/6=>x= mol C=6\*9/4=13.5 mol

13.5 mol C\*12=162 g C

3. 32 g H = 32 mol H

Mol asp/mol H = 1/8=x/32=> mol asp =32/8=4 mol asp

4 mol asp \* 180 g/mol =720 g asp corrected answer

4. 1.204\*1024/6.02\*1023 = 2 Mol O

Mol C/mol O = 9/4=x/2=> mol C=18/4=4.5 mol C

5. 720 g C/12 g mol-1 =60 mol C

Mol H/mol C = 8/9 =x/60=> mol H=8\*60/9=53.33 mol H

53.33 mol \*6.02\*1023=3.21\*1025 atoms H corrected answer

6. 360 g C/12 g mol-1 = 30 mol C

Mol O/mol C= 4/9=x/30=> x=133.3 mol O

133.3 mol O \*16 g/mol O=2132.8 g O corrected answer

7. 4.816\*1024 molecules asp/6.02\*1023=8 mol asp

Mol H/mol asp= 8/1=x/8=> mol H=8\*8=64 mol H

8. 64 g O/16 g mol-1 = 4 mol O

Mol asp/mol O =1/4 =x/4=> mol asp= 1

9. 30 g H= 30 mol H

Mol asp/mol H= 1/8 =x/30=> mol asp=30/8=3.75 mol asp

3.75mol \*180 g/mol =676 g

10. 3.01\*1022 atoms/6.02\*1023 atom mol-1 = 0.05 mol C

Mol H/mol C= 8/9=x/0.05=> mol H= 8\*0.05/9=0.0444 mol H

0.0444 Mol \*6.02\*1023=2.6755\*1022 atoms H