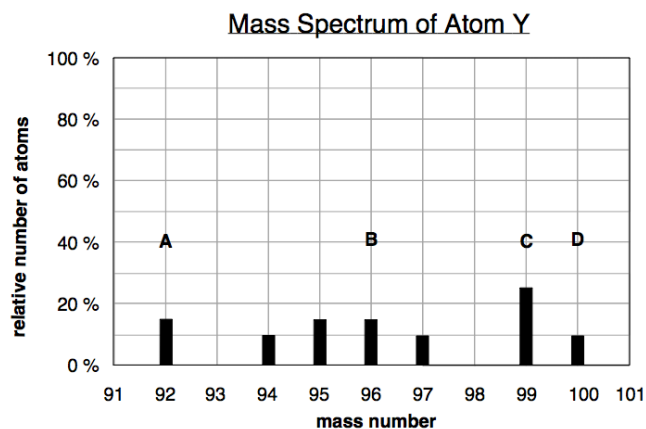


## Chapter 3 MC Review

- What is the average mass, in grams, of one atom of iron?  
 A.  $6.02 \times 10^{23}$  g      C.  $9.28 \times 10^{-23}$  g  
 B.  $1.66 \times 10^{-24}$  g      D. 55.85 g
- Which of these quantities does *not* represent 1.00 mol of the indicated substance?  
 A.  $6.02 \times 10^{23}$  C atoms      C. 12.01 g C  
 B. 26.0 g Fe      D. 65.4 g Zn
- One nanogram doesn't seem like a very large number. How many magnesium atoms are there in 1.00 ng of magnesium?  
 A.  $4.11 \times 10^{-11}$  atoms      C.  $1.46 \times 10^{34}$  atoms  
 B.  $2.48 \times 10^{13}$  atoms      D.  $6.83 \times 10^{-35}$  atoms
- How many atoms are in 5.54 g of  $F_2$ ?  
 A.  $6.02 \times 10^{23}$  atoms      C.  $8.78 \times 10^{22}$  atoms  
 B. 0.146 atoms      D.  $1.76 \times 10^{23}$  atoms
- Determine the number of moles of aluminum in 96.7 g of Al.  
 A. 0.279 mol      C. 7.43 mol  
 B. 3.58 mol      D. 4.21 mol
- How many moles of  $CF_4$  are there in 171 g of  $CF_4$ ?  
 A. 0.51 mol      C. 4.07 mol  
 B. 1.94 mol      D. 88.0 mol
- Which of the following samples contains the greatest number of atoms?  
 A. 100 g of Pb      C. 0.1 mole of Fe  
 B. 2.0 mole of Ar      D. 5 g of He
- How many sodium atoms are there in 6.0 g of  $Na_3N$ ?  
 A.  $3.6 \times 10^{24}$  atoms      C.  $1.3 \times 10^{23}$  atoms  
 B. 0.072 atoms      D. 0.217 atoms
- Boron obtained from borax deposits in Death Valley consists of two isotopes. They are boron-10 and boron-11 with atomic masses of 10.013 amu and 11.009 amu, respectively. The atomic mass of boron is 10.81 amu (see periodic table). Which isotope of boron is more abundant, boron-10 or boron-11?  
 A. This cannot be determined from data given.  
 B. Neither, their abundances are the same.  
 C. Boron-10  
 D. Boron-11
- The percent composition by mass of a compound is 76.0% C, 12.8% H, and 11.2% O. The molar mass of this compound is 284.5 g/mol. What is the molecular formula of the compound?  
 A.  $C_{18}H_{36}O_2$       C.  $C_{16}H_{28}O_4$   
 B.  $C_9H_{18}O$       D.  $C_{20}H_{12}O_2$

- Balance the equation below using the smallest set of whole numbers. What is the coefficient of  $H_2O$ ?  
 $\underline{\hspace{1cm}} PCl_3(l) + \underline{\hspace{1cm}} H_2O(l) \rightarrow \underline{\hspace{1cm}} H_3PO_3(aq) + \underline{\hspace{1cm}} HCl(aq)$   
 A. 1      C. 3  
 B. 2      D. 5
- A gold wire has a diameter of 1.00 mm. What length of this wire contains exactly 1.00 mol of gold?  
 [Given: density of Au =  $17.0 \text{ g/cm}^3$ ]  
 A. 2630 m      C. 251 m  
 B. 3.69 m      D. 14.8 m

The following 3 questions refer to the mass spectrum of Atom Y as shown below:



- Based on the mass spectrum of atom Y, which of the following statements is *false*?  
 A. peak D comes from an atom with 4 more protons than the atom that gave peak B  
 B. peak A and peak D come from atoms that have the same number of electrons  
 C. there are seven isotopes of atom Y  
 D. peak C comes from the most abundant isotope of atom Y
- The identity of compound Y is:  
 A. zirconium  
 B. molybdenum  
 C. americium  
 D. einsteinium
- Which peak comes from an atom with the greatest number of neutrons?  
 A. A  
 B. all peaks in the spectrum have the same number of neutrons  
 C. C  
 D. D