AP Chemistry Worksheet 1.1   Review Work

1. Determine the number of significant figures in the following:
   a) 123   b) 0.240   c) 0.057010
   d) 0.0000001   e) 280
2. Report the following to the correct number of significant figures
   a. 2.7 / 5.27   b. 4.5 * 9.56   c. 2 * 5.6
   d. 4.00 * 2.658   e. 89.5 / 2.0   f. 12.11 + 118.0 + 1.013
   g. 4.5 + 3.456 - 1.956   h. (4.68 + 7.582) / 12.262
3. Convert 4.5 miles to km (1609 meters = 1 mile)
4. Ethanol has a density of 0.789 g/cm^3. If the volume of sample is 37.9 mL, what is the mass?
5. A person weighed 15 pennies on a balance and recorded the following masses:

3.112	3.109	3.059
2.467	3.079	2.518
3.129	2.545	3.050
3.053	3.054	3.072
3.081	3.131	3.064

Curious about the results, he looked at the dates on each penny. Two of the light pennies were minted in 1983 and one in 1982. The dates on the 12 heavier pennies ranged from 1970 to 1982. Two of the 12 heavier pennies were minted in 1982.
   a) Do you think the Bureau of the Mint changed the way they made pennies? Explain.
   b) The person calculated the average mass of the 12 heavy pennies. He expressed this average as 3.0828 g ± 0.0482 g. What is wrong with the numbers in this result, and how should the value be expressed?

6. Carbon-12 has a natural abundance of 98.892%. Carbon-13 is another naturally occurring isotope and has a mass of 13.00335 amu. Determine the average atomic mass.

   **Recall C-12 is the standard for the periodic table.

7. Naturally occurring boron consists of 80% ^{11}B (nuclide mass = 11.01 amu) and 20% another isotope. What is the mass of the other isotope?
   Ans) 10.0 amu

8. Chlorine has two naturally occurring isotopes: ^{35}Cl and ^{37}Cl. What is each atom's percent abundance (% distribution)?
   Ans) ^{35}Cl = 75.76% and ^{37}Cl = 24.24%

9. One isotope of N weighs1.167 225 times more than the standard for the periodic table. The other isotope weighs 1.250 008 3 times more. What is the natural abundance of each isotope?

   Ans) ^{14}N = 99.64%, ^{15}N = 0.36%