(8) 1.) An automobile is traveling at a constant rate of 60.0 mile/hr for 24 minutes. Find the distance in meters that the automobile traveled. Hint: 1 km = 0.6214 mile

(3) 2.) How many significant figures are there in the results of the following arithmetic operations:
   a.) $0.0003890 \times 3,694.057$  
   b.) $4973.2 + 24.636$  
   c.) $464.0730 \div 0.00058917$

(2) 3a.) Choose the most active metal from the list: Al, Ca, Cs, Na  
     b.) Choose the most active nonmetal from the list: Se, P, I, O

(6) 4.) Complete the following table for the following:

<table>
<thead>
<tr>
<th># of protons</th>
<th># of electrons</th>
<th># of neutrons</th>
</tr>
</thead>
<tbody>
<tr>
<td>$^{123}_{51}$Sb$^{-3}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$^{107}_{47}$Ag$^{+}$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(10) 5.) Acetaldehyde has the molecular formula C$_2$H$_4$O. Given 55.0 g of Acetaldehyde and the approximate atomic masses of C = 12.0, H = 1.0, O = 16.0
   a.) Find the molecular mass of acetaldehyde  
   b.) Find the number of moles of acetaldehyde  

c.) Find the number of moles of H atoms in this sample ______

d.) Find the number of molecules of acetaldehyde in this sample __________

e.) Find the number of C atoms in this sample ______

(3) 6.) Give an example of a representative element _______ , a transition metal _______ , an inner transition metal _______

(6) 7.) Name the following compounds:

a.) \( \text{CH}_3\text{CH}_2\text{CH}_2\text{CHBrCH}_2\text{CH}_3 \) __________________________

b.) \( \text{Al}_2(\text{PO}_3)_3 \) __________________________

c.) \( \text{Al}_2(\text{SO}_4)_3 \) __________________________

(6) 8.) Write down the formula for the following:

a.) butyl chloride _________________________________

b.) Potassium permanganate _________________________________

c.) Calcium hypochlorite _________________________________

(12) 9.) Find the empirical formula of a compound that consists of 63.15 % C, 5.30 % H, and 31.55 % O. Use the atomic wts: C = 12.01, H = 1.008, O = 16.

(5) 10.) Convert -54.5°F to Kelvin temperature, given that the Kelvin temperature is equal to the Celsius temperature + 273.1.

(15) 11.) Ammonia combines with carbon dioxide to form urea ( \( \text{CH}_4\text{N}_2\text{O} \) ) according to the
following **unbalanced** equation: \( \text{NH}_3 + \text{CO}_2 \rightarrow \text{CH}_4\text{N}_2\text{O} + \text{H}_2\text{O} \). Assuming that one starts with 136.4 kg of ammonia and 211.4 kg of carbon dioxide and one obtains 168.4 kg of urea. What is the % yield? Atomic masses: C = 12.01, N = 14.01, H = 1.01, O = 16.00

(8) 12.) How many grams of NaCl should one add to water in order to make 250.0 ml of a 0.2500 M NaCl solution. Atomic masses: Na = 22.99, Cl = 35.45

(16) 13.) Write net ionic equations for the following: (If no reaction occurs write NR)

a.) \( \text{NaCl}_{(aq)} + \text{Pb(NO}_3)_2 \rightarrow \)

b.) \( \text{H}_2\text{SO}_4_{(aq)} + \text{Ca(NO}_3)_2 \rightarrow \)

c.) \( \text{FeCl}_2_{(aq)} + \text{CuSO}_4_{(aq)} \rightarrow \)

d.) \( \text{Cu(OH)}_2_{(s)} + \text{H}_2\text{SO}_4_{(aq)} \rightarrow \)