NAME
STOICHIOMETRY
MASS 1

In each of the following problems circle the substance which contains the largest number of particles

1. 10. g $AgNO_3$ or 100. g H_2 — $10g\ AgNO_3 \frac{1\ mol}{170g} = 0.06\ mol\ AgNO_3$ $100g\ H_2 \frac{1\ mol}{2g} = 50\ mol\ H_2$
2. 50. g H_2O or 50. g CO_2 — $50g\ H_2O \frac{1\ mol}{18g} = 2.8\ mol\ H_2O$ $50g\ CO_2 \frac{1\ mol}{44g} = 1.1\ mol\ CO_2$
3. 50.g $C_6H_{12}O_6$ or 45. g $C_{12}H_{22}O_{11}$ — $50g\ C_6H_{12}O_6 \frac{1\ mol}{180g} = 0.28\ mol$ $45g \frac{1\ mol}{342g} = 0.13\ mol$
4. 1254 g CCl_4 and 999. g $PbCl_2$ — $1254g\ CCl_4 \frac{1\ mol}{154g} = 8.14\ mol\ CCl_4$ $999g\ PbCl_2 \frac{1\ mol}{278g} = 3.6\ mol$

In each of the following questions determine the number of equivalent particles.
(How many grams of Cl_2 would equal the moles of O_2. How much would those molecules of Cl_2 weigh.)

1. 25. g O_2 = 0.78 moles O_2 = Cl_2 55 g Cl_2 — $25g \frac{1\ mol}{32g} = 0.78\ mol \frac{71g}{1\ mol} =$
2. 15. g $NaNO_3$ = 0.18 moles $NaNO_3$ = H_2 0.35 g H_2 — $15g \frac{1\ mol}{85g} =$ $0.18\ mol\ H_2 \frac{2g}{1\ mol}$
3. 1.0 g $PbCl_4$ = 0.0029 moles $PbCl_4$ = He 0.011 g He — $1g\ PbCl_4 \frac{1\ mol}{349g} =$ $0.0029\ mol\ He \frac{4g}{1\ mol\ He}$

FOR THE FOLLOWING REACTIONS DETERMINE MASS OF "?"

$Cu(NO_3)_2$: $105.5 / 14\times2 / 16\times6$

1. $2AgNO_{3(aq)} + Cu_{(s)} \rightarrow Cu(NO_3)_{2(aq)} + 2Ag_{(s)}$
   15g excess ?
   $15g\ AgNO_3 \frac{1\ mol}{170g} \frac{1\ Cu(NO_3)_2}{2\ mol\ AgNO_3} \frac{187.5\ g\ Cu(NO_3)_2}{1\ mol\ Cu(NO_3)_2} = 8.3\ Cu(NO_3)_2$

2. $2HCl_{(aq)} + Zn_{(s)} \rightarrow H_{2(g)} + ZnCl_{2(aq)}$
   Excess 25g ?
   $25g\ Zn \frac{1\ mol\ Zn}{65g\ Zn} \frac{1\ mol\ H_2}{1\ mol\ Zn} \frac{2g\ H_2}{1\ mol\ H_2} = 0.77g\ H_2$

3. $CH_4 + 2O_2 \rightarrow 2H_2O + CO_2$
   Excess 10g ?
   $10g\ O_2 \frac{1\ mol\ O_2}{32g\ O_2} \frac{2\ mol\ H_2O}{2\ mol\ O_2} \frac{18g\ H_2O}{1\ mol\ H_2O} = 5.6g\ H_2O$

4. $CH_4 + 2O_2 \rightarrow 2H_2O + CO_2$
   10g excess ?
   $10g\ CH_4 \frac{1\ mol}{16g\ CH_4} \frac{2\ mol\ H_2O}{1\ mol\ CH_4} \frac{18g\ H_2O}{1\ mol\ H_2O} = 22.5\ g\ H_2O$