Mole Practice Questions

1. a) $M_{Ca} = 40.078$ g/mol

b) $M_{AlBr_3} = \underbrace{26.982}_{Al} + \underbrace{3(79.904)}_{Br}$
$= 266.694$ g/mol

c) $M_{Ba(NO_3)_2} = \underbrace{137.33}_{Ba} + \underbrace{2(14.007)}_{N} + \underbrace{6(15.999)}_{O}$
$= 261.338$ g/mol

d) $M_{Fe_2(SO_4)_3} = \underbrace{2(55.845)}_{Fe} + \underbrace{3(32.065)}_{S} + \underbrace{12}_{O}$

e) $M_{N_2} = \underbrace{2(14.007)}_{N}$
$= 28.014$ g/mol

f) $M_{Ag_2O} = \underbrace{2(107.87)}_{Ag} + \underbrace{15.999}_{O}$
$= 231.739$ g/mol

2. a) $M_{CaF_2} = \underbrace{40.078}_{Ca} + \underbrace{2(18.998)}_{F}$
$= 78.074$ g/mol

b) $M_{LiOH} = \underbrace{6.94}_{Li} + \underbrace{15.999}_{O} + \underbrace{1.0079}_{H}$
$= 23.9469$ g/mol

c) $M_{MgSO_4} = \underbrace{24.305}_{Mg} + \underbrace{32.065}_{S} + \underbrace{4(15.999)}_{O}$
$= 120.366$ g/mol

d) $M_{CF_4} = \underbrace{12.011}_{C} + \underbrace{4(18.998)}_{F}$
$= 88.003$ g/mol

e) $M_{Zn_3(PO_4)_2} = \underbrace{3(65.39)}_{Zn} + \underbrace{2(30.974)}_{P} + \underbrace{8(15.999)}_{O}$
$= 386.11$ g/mol

f) $M_{AgClO_4} = \underbrace{107.87}_{Ag} + \underbrace{35.453}_{Cl} + \underbrace{4(15.999)}_{O}$
$= 207.319$ g/mol

3. a) $M_{NH_3} = \underbrace{14.007}_{N} + \underbrace{3(1.0079)}_{H}$
$= 17.0307$ g/mol

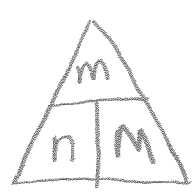
b) $m = nM$
$= (10)(17.0307)$
$= 170.307$ g

c) $m = nM$
$= (0.25)(17.0307)$
$\doteq 4.258$ g

d) $n = \frac{m}{M}$
$= \frac{340\text{ g}}{17.0307}$
$\doteq 19.96$ mol

e) $n = \frac{m}{M}$
$= \frac{5.0\text{ g}}{17.0307\text{ g/mol}}$
$\doteq 0.294$ mol

f)



$m = nM$

$n = \frac{m}{M}$

$M = \frac{m}{n}$

Mole Practice Questions

4. $N = n N_A$
$= (1)(6.02 \times 10^{23})$
$= 6.02 \times 10^{23}$ molecules of CO_2

5. $N = n N_A$
$= 3(6.02 \times 10^{23})$
$= 1.806 \times 10^{24}$ molecules of SO_2

6. $N = n N_A$
$= (0.5)(6.02 \times 10^{23})$
$= 3.01 \times 10^{23}$ atoms of Ar

7. $N = n N_A$
$= (5.25)(6.02 \times 10^{23})$
$= 3.1605 \times 10^{24}$ ions of $Al^{+3}(aq)$