CHEM - Extra Practice Balancing Equations

Balance: a) $\underline{I}Br_{(s)} + NH_{3\,(g)} \longrightarrow N\underline{I}_{3\,(s)} + NH_4Br_{(s)}$

b) $C_4H_{10\,(l)} + O_{2\,(g)} \longrightarrow CO_{2\,(g)} + H_2O_{(g)}$

c) $C_4H_{10\,(g)} + O_{2\,(g)} \longrightarrow CO_{(g)} + H_2O_{(g)}$

d) $CH_3OH_{(l)} + O_{2\,(g)} \longrightarrow CO_{2\,(g)} + H_2O_{(g)}$

e) $CH_3OH_{(l)} + O_{2\,(g)} \longrightarrow CO_{(g)} + H_2O_{(g)}$

f) $CuO_{(s)} + NH_{3\,(g)} \longrightarrow Cu_{(s)} + H_2O_{(g)} + N_{2\,(g)}$

g) $NH_{3\,(g)} + O_{2\,(g)} \longrightarrow NO_{(g)} + H_2O_{(g)}$

h) $P_4O_{10\,(s)} + H_2O_{(l)} \longrightarrow H_3PO_{4\,(aq)}$

i) $KClO_{3\,(s)} \xrightarrow{\Delta} KCl_{(s)} + O_{2\,(g)}$ NB: Δ means heat

j) $Cr_{(s)} + H_2O_{(g)} \longrightarrow Cr_2O_{3\,(s)} + H_{2\,(g)}$

k) $KClO_{3\,(s)} + Al_2(SO_4)_3 \longrightarrow K_2SO_{4\,(s)} + Al(ClO_3)_3$

How to verify that an equation is balanced:

* Check the mass on each side - they will be equal if you're balanced

N.B. Aproximate (rounded) masses are fine... in this case you're just comparing.

eg a) $3\,\underline{I}Br_{(s)} + 4\,NH_{3\,(g)} \longrightarrow 1\,N\underline{I}_{3\,(g)} + 3\,NH_4Br_{(s)}$

reagents : $3[HH_I + HH_{Br}] + 4[HH_N + 3HH_H]$

$= 3[126.9 + 79.9] + 4[14 + 3(1)]$

$= 3[206.8] + 4[17] = 688.4$

total mass on reagent side

products : $1[14 + 3(126.9)] + 3[14 + 4(1) + 79.9]$

$= 1[394.7] + 3[97.9] = 688.4$

total mass on products side.

* You can now check the rest for yourselves.