Chemical Equations Practice:

name: _SOLUTIONS_

1) Write the 3 chemical equations (balanced) involved with the formation of Acid rain from the emission of Sulfur by industries.

Step1: Sulfur combines with O_2 in the atmosphere to produce Sulfur dioxide

$$S + O_2 \rightarrow SO_2$$

Step2: Sulfur dioxide combines with more O_2 in the atmosphere to produce Sulfur trioxide

$$2SO_2 + O_2 \rightarrow 2SO_3$$

Step3: Sulfur trioxide combines with water vapor in the atmosphere to produce Sulfuric Acid H_2SO_4 (which falls as acid rain)

$$SO_3 + H_2O \rightarrow H_2SO_4$$

2) Complete the following Photosynthesis equation. Don't forget to balance !

When water combines with carbon dioxide and energy from the sun, a plant will produce sugar ($C_6H_{12}O_6$) as well as oxygen gas which is released into the environment.
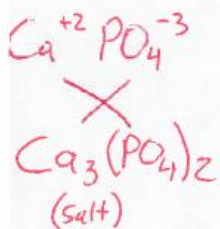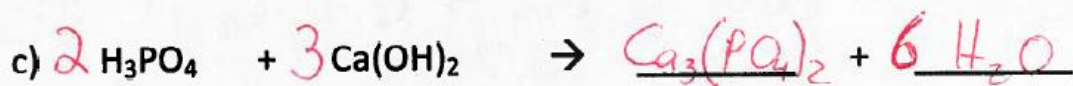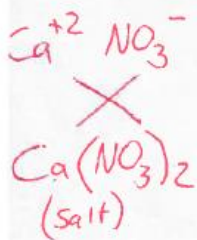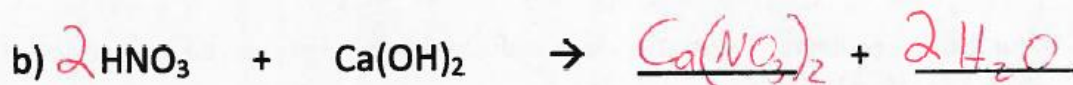
$$6H_2O + 6CO_2 + Energy \rightarrow C_6H_{12}O_6 + 6O_2$$

3) Complete the following chemical equations involving the burning of fuels:

a)   _Benzene_: $2C_6H_6 + 15O_2 \rightarrow 12CO_2 + 6H_2O$

b)   _Hexane_: $2C_6H_{14} + 19O_2 \rightarrow 12CO_2 + 14H_2O$
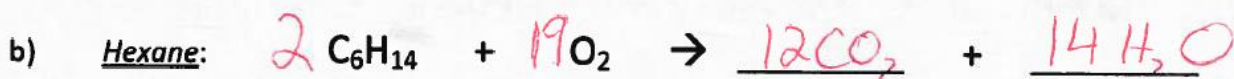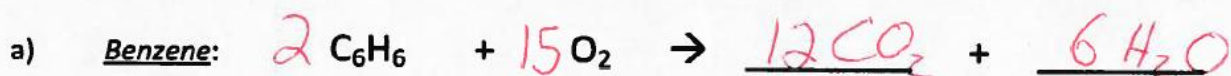
4) Complete the following reactions:
   (Don't forget to always balance)

   What types of reactions are a) b) and c) : __Neutralizations__

   a) 2 HBr $\quad+\quad$ Ba(OH)$_2$ $\quad\rightarrow\quad$ __BaBr$_2$__ $+$ __2 H$_2$O__

Ba^{+2} Br^-

$\times$

$BaBr_2$
(salt)

   b) 2 HNO$_3$ $\quad+\quad$ Ca(OH)$_2$ $\quad\rightarrow\quad$ __Ca(NO$_3$)$_2$__ $+$ __2 H$_2$O__
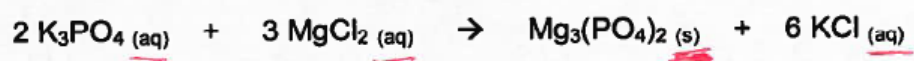
Ca^{+2} NO_3^-

$\times$

$Ca(NO_3)_2$
(salt)

   c) 2 H$_3$PO$_4$ $\quad+\quad$ 3 Ca(OH)$_2$ $\quad\rightarrow\quad$ __Ca$_3$(PO$_4$)$_2$__ $+$ __6 H$_2$O__

Ca^{+2} PO_4^{-3}

$\times$

$Ca_3(PO_4)_2$
(salt)
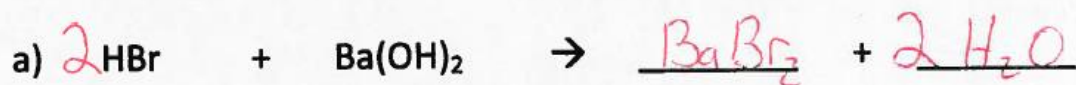
5) What type of reaction is the following: __Precipitate Reaction__

   2 K$_3$PO$_4$ (aq) $\quad+\quad$ 3 MgCl$_2$ (aq) $\quad\rightarrow\quad$ Mg$_3$(PO$_4$)$_2$ (s) $\quad+\quad$ 6 KCl (aq)

6) Complete the following and balance:

   Mg$_{(s)}$ $\quad+\quad$ 2HCl$_{(aq)}$ $\quad\rightarrow\quad$ __MgCl$_2$__ $+$ __H$_2$__