Answers Chp 6 Review

1.a) The Law of Conservation of mass states that the total mass of the products is the same as the total mass of products in a chemical reaction.

 b) This law means that atoms are neither created or destroyed only re-arranged. Therefore the number of atoms on each side of the equation must be the same.

2. a) synthesis reaction
    c) skeletal equation
    d) decompostion reaction
    e) co-efficient

3. a) A word equation contains words to represent compounds **and elements**
    b) The total mass of products is **ALWAYS** equal to the total mass of reactants.
    d) Atoms **ARE NEVER** destroyed in chemical changes
    e) compouds are broken down in **DECOMPOSITIONS**
    f) Elements and compounds react in **SINGLE DISPLACEMENT REACTIONS**
    g) Elements combine in **SYNTHESIS** reactions
    h) The products of combustion of a hydrocarbon are carbon dioxide and **WATER**

4. (a) acetylene + oxygen →carbon dioxide + water
(Combustion)

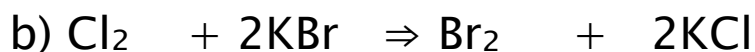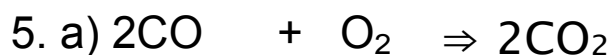**(b)** zinc + silver nitrate →zinc nitrate + silver
(Single Displacement)

(c) zinc carbonate →zinc oxide + carbon dioxide
(Decomposition)

(d) nitrogen + oxygen →nitrogen dioxide
(Synthesis)

(e) potassium hydroxide + phosphoric acid → water +potassium phosphate
(Double Displacement)

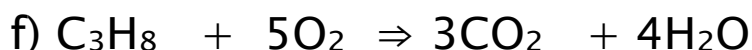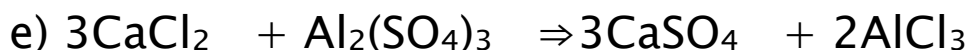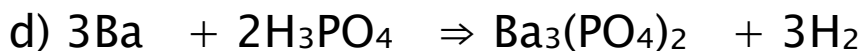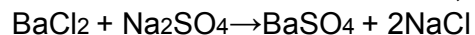**(f)** hydrogen + nitrogen → ammonia (Synthesis)

5. a) $2CO + O_2 \Rightarrow 2CO_2$

   b) $Cl_2 + 2KBr \Rightarrow Br_2 + 2KCl$

   c) balanced

6. a) $Ca + 2HBr \Rightarrow CaBr_2 + H_2$

   b) $4Al + 3O_2 \Rightarrow 2Al_2O_3$

   c) balanced

   d) $3Ba + 2H_3PO_4 \Rightarrow Ba_3(PO_4)_2 + 3H_2$

   e) $3CaCl_2 + Al_2(SO_4)_3 \Rightarrow 3CaSO_4 + 2AlCl_3$
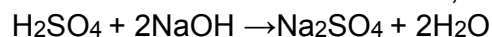
   f) $C_3H_8 + 5O_2 \Rightarrow 3CO_2 + 4H_2O$

7. (a) Barium chloride and sodium sulfate react to form barium sulfate and sodium chloride
$BaCl_2 + Na_2SO_4 \rightarrow BaSO_4 + NaCl$;
$BaCl_2 + Na_2SO_4 \rightarrow BaSO_4 + 2NaCl$
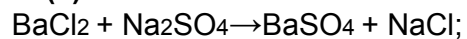
(b) Sulfuric acid and sodium hydroxide react to form sodium sulfate and water
$H_2SO_4 + NaOH \rightarrow Na_2SO_4 + H_2O$;
$H_2SO_4 + 2NaOH \rightarrow Na_2SO_4 + 2H_2O$
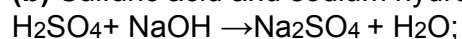
(c) Potassium chlorate decomposes to form potassium chloride and oxygen
$KClO_3 \rightarrow KCl + O_2$;
$2KClO_3 \rightarrow 2KCl + 3O_2$
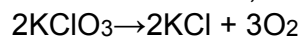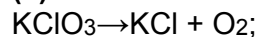
12. Mass of reactants = Mass of products
metal + acid solution = product + gas
3.4 g + 102.5 g = 105.6 g + *x (gas)*
105.9 g = 105.6 g + *x (gas)*
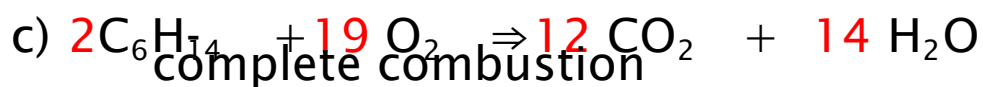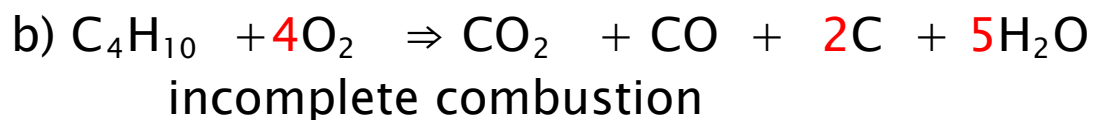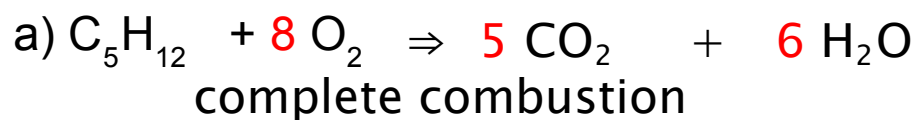*x (gas)* = 105.9 g – 105.6 g
= 0.3 g
The mass of gas produced is 0.3 g.

Part B

a) $C_5H_{12} + 8O_2 \Rightarrow 5CO_2 + 6H_2O$

        complete combustion

b) $C_4H_{10} + 4O_2 \Rightarrow CO_2 + CO + 2C + 5H_2O$

        incomplete combustion

c) $2C_6H_{14} + 19O_2 \Rightarrow 12CO_2 + 14H_2O$

        complete combustion

Part C

calcium + acid $\Rightarrow$ product + gas

    4.5 g + 103.8 g $\Rightarrow$ 109.4 g + ?

      108.3g $\Rightarrow$ 108 g + ?

        108.3 g – 108g = 0.3 g

The law of conservation of mass states that the mass of the reactants must equal the mass of the products in a reaction. The mass that is missing is the mass of the gas because it has evaporated into the air and cannot be measured in the beaker.