Homework

$$58.8g \; C \quad \times \quad \frac{1 \; mol \; C}{12.01 \; g \; C} = \frac{4.896 \, mol \; C}{1.963 \, mol} = 2.5 \quad \overset{5}{\underset{2}{=}}$$

$$9.8g \; H \quad \times \quad \frac{1 \, mol \; H}{1.01g \; H} = \frac{9.703 \, mol \; H}{1.963 \, mol} = 5 \times 2 = 10$$

$$31.4g \; O \quad \times \quad \frac{1 \, mol \; O}{16.00g \; O} = \frac{1.963 \, mol \; O}{1.963 \, mol} = 1 \times 2 = 2$$
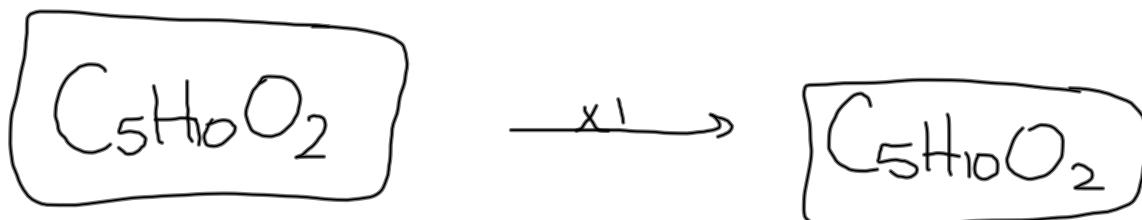
$$\boxed{C_5H_{10}O_2} \xrightarrow{\times 1} \boxed{C_5H_{10}O_2}$$

$$102.15 g/mol \xrightarrow{\times 1} 102.15 g/mol$$

$$C_5H_{10}O_2 \rightarrow (5 \times 12.01) + (10 \times 1.01) + (2 \times 16.00)$$
$$= 102.15 \, g/mol$$

Reaction Generalizations

DECOMPOSITION

compound $\longrightarrow$ elements

COMBUSTION
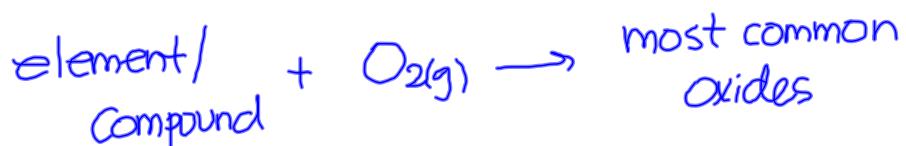
element/ compound $+$ $O_{2(g)}$ $\longrightarrow$ most common oxides

DOUBLE REPLACEMENT

compound + compound $\longrightarrow$ compound + compound

SINGLE REPLACEMENT

element + compound $\longrightarrow$ element + compound

FORMATION

elements $\longrightarrow$ compound

Sample Reactions

$$Ca(NO_3)_{2(s)} \longrightarrow Ca_{(s)} + N_{2(g)} + 3O_{2(g)}$$

DECOMP.

$$2 C_4H_{10(l)} + 13 O_{2(g)} \longrightarrow 8 CO_{2(g)} + 10 H_2O_{(g)}$$

COMBUSTION

Na^+ Br^- Al^{3+} SO_4^{2-}

$$6 NaBr_{(aq)} + Al_2(SO_4)_{3(aq)} \longrightarrow 3 Na_2SO_{4(aq)} + 2 AlBr_{3(aq)}$$

D.R.

Br^- Mg^{2+}

$$2 KBr_{(aq)} + Mg_{(s)} \longrightarrow 2 K_{(s)} + MgBr_{2(aq)}$$

S.R.

Cu^{2+} Cl^-

$$Cu_{(s)} + Cl_{2(g)} \longrightarrow CuCl_{2(s)}$$
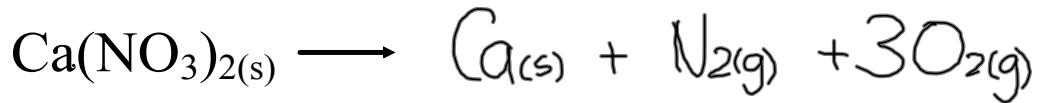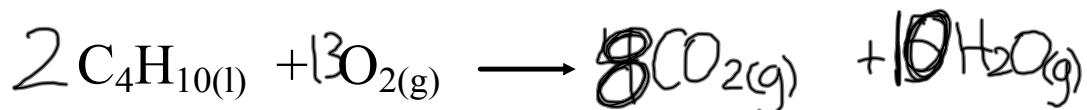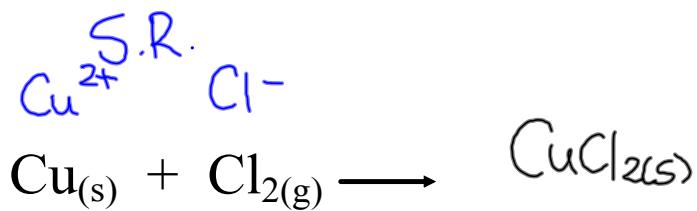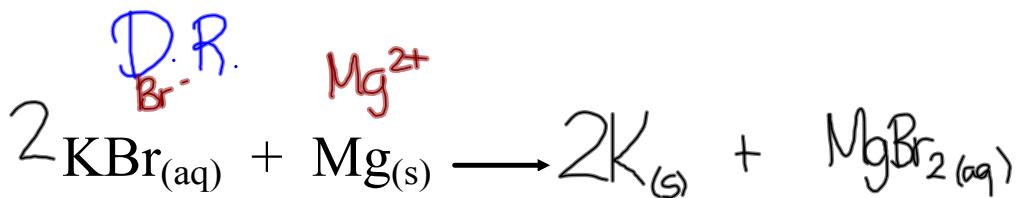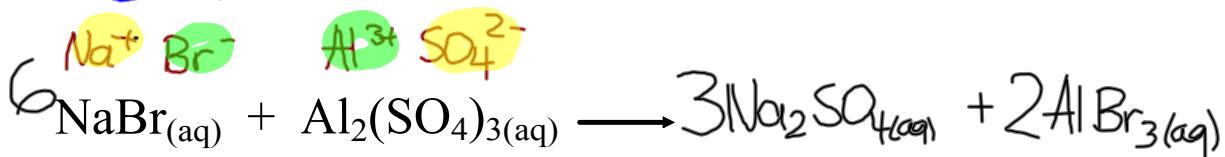
FORMATION

Types of Reactions Review

Worksheet