

## Lesson 13: Single Replacement Reactions

- An element reacts with an ionic compound
- After the reaction the element ends up in the compound and one of the elements ends up by itself
- One type, the metals trade places
- Second type, the non-metals trade places

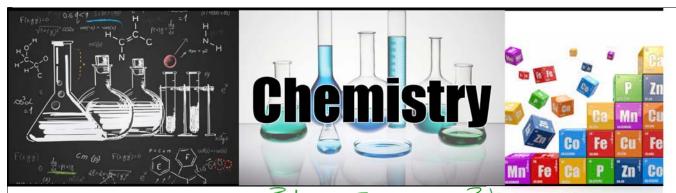
Ex.) Write and balance the following single replacement reactions:

a) magnesium  $\pm$  silver nitrate  $\longrightarrow$  silver + magnesium nitrate

$$\frac{1}{1} \frac{Mg(s)}{2} + \frac{2}{1} \frac{AgNO_3(aq)}{2} \rightarrow \frac{2}{1} \frac{Ag(s)}{2} + \frac{1}{1} \frac{Mg(NO_3)_{2(aq)}}{2}$$

b) chlorine reacts with silver bromide to make silver chloride and bromine

$$\frac{|C|_{2(g)} + 2A_gB_{\Gamma(5)}}{} \rightarrow |B_{\Gamma_2(2)} + 2A_gC|_{(5)}}$$



c) liquid bromine + aqueous chromium (Ⅲ) iodide → chromium (Ⅲ) bromide + solid iodine

$$3B_{r_2(l)} + 2Cr \underline{L}_{3(aq)} \rightarrow 2CrBr_{3(aq)} + 3\underline{L}_{2(s)}$$

d) aluminium + copper (11) iodide -> copper + aluminium iodide

$$2AI_{(5)} + 3CuI_{2(5)} \rightarrow 3Cu_{(5)} + 2AII_{3(aq)} + CI_{2(g)} + 2NaI_{(aq)} \rightarrow II_{2(5)} + 2NaI_{(aq)} \rightarrow Sodium chloride$$
e) 
$$\frac{1}{2} \frac{CI_{2(g)} + 2NaI_{(aq)}}{2NaI_{(aq)}} \rightarrow II_{2(5)} + 2NaI_{(aq)} = Sodium chloride$$

f) 
$$\frac{1}{\sqrt{\frac{\text{Fe}_{(s)} + 1}{\sqrt{\frac{\text{Cu}(NO_3)_{2(aq)}}{\sqrt{\frac{\text{Cu}(NO_3)_{2(aq)}}{\sqrt{\frac{\text{Fe}_{(s)} + 1}{\sqrt{\frac{\text{Fe}_{(s)} + 1}{\sqrt{\frac{\text{Cu}(NO_3)_{2(aq)}}{\sqrt{\frac{\text{Fe}_{(s)} + 1}{\sqrt{\frac{\text{Cu}(NO_3)_{2(aq)}}}{\sqrt{\frac{\text{Cu}(NO_3)_{2(aq)}}{\sqrt{\frac{Cu}(NO_3)_{2(aq)}}{\sqrt{\frac{Cu}(NO_3)_{2(aq)}}{\sqrt{\frac{C$$

\* 2 possible answers

Worksheet

2 Fe(s)+3 Cu(ND3)2 ->3 Cu+2 Fe(NO3)2