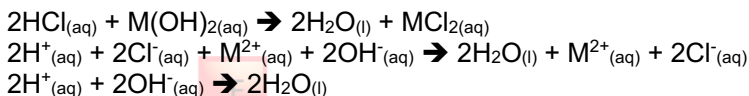


AP WORKSHEET 04GHI: ANSWERS

1.

- (a)  $\text{Na} \rightarrow \text{Na}^+ + \text{e}^-$   
 $\frac{1}{2}\text{Cl}_2 + \text{e}^- \rightarrow \text{Cl}^-$   
 $\text{Na} + \frac{1}{2}\text{Cl}_2 \rightarrow \text{NaCl}$  (or all equations doubled)
- (b)  $\text{Mg} \rightarrow \text{Mg}^{2+} + 2\text{e}^-$   
 $\frac{1}{2}\text{O}_2 + 2\text{e}^- \rightarrow \text{O}^{2-}$   
 $\text{Mg} + \frac{1}{2}\text{O}_2 \rightarrow \text{MgO}$  (or all equations doubled)
- (c)  $\text{Br}^+ \rightarrow \text{Br}^{5+} + 4\text{e}^-$   
 $2\text{Br}^+ + 4\text{e}^- \rightarrow 2\text{Br}^-$   
 $3\text{Br}^+ \rightarrow \text{Br}^{5+} + 2\text{Br}^-$  (can also show as  $\text{BrO}^-$ ,  $\text{BrO}_3^-$  etc.)
- (d)  $\text{Zn} \rightarrow \text{Zn}^{2+} + 2\text{e}^-$   
 $\text{Fe}^{2+} + 2\text{e}^- \rightarrow \text{Fe}$   
 $\text{Zn} + \text{Fe}^{2+} \rightarrow \text{Fe} + \text{Zn}^{2+}$  (can also show as  $\text{FeSO}_4$  and  $\text{ZnSO}_4$ )

2.



3.

N	$\text{NR}$	$\text{NR}$	Copper not sufficiently reactive to displace hydrogen gas from an acid
Y	$2\text{KOH} + \text{H}_2\text{SO}_4 \rightarrow \text{K}_2\text{SO}_4 + 2\text{H}_2\text{O}$ (assumes $\text{H}_2\text{SO}_4$ donates BOTH H's)	Acid Base Double Displacement	R
Y	$\text{Zn} + 2\text{AgNO}_3 \rightarrow \text{Zn}(\text{NO}_3)_2 + 2\text{Ag}$	Single Displacement Redox	R
Y	$\text{CuSO}_4 + 2\text{NaOH} \rightarrow \text{Cu}(\text{OH})_2 + \text{Na}_2\text{SO}_4$	Double Displacement Precipitation	R
Y	$2\text{Na} + \text{Cl}_2 \rightarrow 2\text{NaCl}$	Combination Redox	R
Y	$\text{Pb}(\text{NO}_3)_2 + 2\text{KCl} \rightarrow 2\text{KNO}_3 + \text{PbCl}_2$	Double Displacement Precipitation	R