

Displacement of Metals

Chemical 16 Equations

General Rule



A metal will be displaced from a salt by a **more reactive** metal.

e.g. 1. Magnesium + Lead Oxide \rightarrow Magnesium Oxide + Lead

A metal will not be displaced from a salt by a **less reactive** metal.

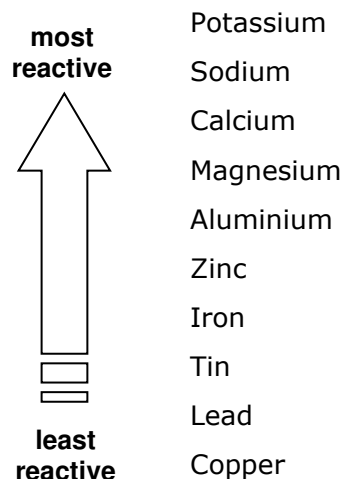
e.g. 2. Lead + Magnesium Oxide \rightarrow No Reaction

Task 1

In your exercise book, write word equations for the following reactions. If you have been taught how to, then write a balanced symbol equation under each word equation (assume a valency of 3 for iron, 2 for lead and 1 for copper).

	Reactants
a.	Aluminium and lead chloride
b.	Potassium and calcium chloride
c.	Sodium and iron chloride
d.	Zinc and aluminium chloride
e.	Lead and copper chloride
f.	Iron and copper oxide
g.	Calcium and lead iodide
h.	Tin and zinc sulfate
i.	Calcium and copper sulfate
j.	Sodium and potassium fluoride
k.	Magnesium and lead nitrate
l.	Iron and zinc sulfate
m.	Copper and aluminium carbonate
n.	Potassium and magnesium chloride
o.	Zinc and lead sulfate
p.	Magnesium and calcium iodide
q.	Aluminium and lead bromide
r.	Potassium and sodium carbonate
s.	Calcium and copper nitrate
t.	Zinc and copper sulfate

Reactivity Series



Displacement of Metals - Answers

a.	Aluminium $2\text{Al}_{(s)}$	+	Lead Chloride $3\text{PbCl}_{2(aq)}$	→	Aluminium Chloride $2\text{AlCl}_{3(aq)}$	+	Lead $3\text{Pb}_{(s)}$
b.	Potassium $2\text{K}_{(s)}$	+	Calcium Chloride $\text{CaCl}_{2(aq)}$	→	Potassium Chloride $2\text{KCl}_{(aq)}$	+	Calcium $\text{Ca}_{(s)}$
c.	Sodium $3\text{Na}_{(s)}$	+	Iron Chloride $\text{FeCl}_{3(aq)}$	→	Sodium Chloride $3\text{NaCl}_{(aq)}$	+	Iron $\text{Fe}_{(s)}$
d.	Zinc $\text{Zn}_{(s)}$	+	Aluminium chloride $\text{AlCl}_{3(aq)}$	→	No Reaction		
e.	Lead $\text{Pb}_{(s)}$	+	Copper Chloride $2\text{CuCl}_{(aq)}$	→	Lead Chloride $\text{PbCl}_{2(aq)}$	+	Copper $2\text{Cu}_{(s)}$
f.	Iron $2\text{Fe}_{(s)}$	+	Copper Oxide $3\text{Cu}_2\text{O}_{(aq)}$	→	Iron Oxide $\text{Fe}_2\text{O}_3(aq)$	+	Copper $3\text{Cu}_{(s)}$
g.	Calcium $\text{Ca}_{(s)}$	+	Lead Iodide $\text{PbI}_{2(aq)}$	→	Calcium Iodide $\text{CaI}_{2(aq)}$	+	Lead $\text{Pb}_{(s)}$
h.	Tin $\text{Sn}_{(s)}$	+	Zinc Sulfate $\text{ZnSO}_4(aq)$	→	No Reaction		
i.	Calcium $\text{Ca}_{(s)}$	+	Copper Sulfate $\text{Cu}_2\text{SO}_4(aq)$	→	Calcium Sulfate $\text{CaSO}_4(aq)$	+	Copper $2\text{Cu}_{(s)}$
j.	Sodium $\text{Na}_{(s)}$	+	Potassium Fluoride $\text{KF}_{(aq)}$	→	No Reaction		
k.	Magnesium $\text{Mg}_{(s)}$	+	Lead Nitrate $\text{Pb}(\text{NO}_3)_2(aq)$	→	Magnesium Nitrate $\text{Mg}(\text{NO}_3)_2(aq)$	+	Lead $\text{Pb}_{(s)}$
l.	Iron $\text{Fe}_{(s)}$	+	Zinc Sulfate $\text{ZnSO}_4(aq)$	→	No Reaction		
m.	Copper $\text{Cu}_{(s)}$	+	Aluminium Carbonate $\text{Al}_2(\text{CO}_3)_3(aq)$	→	No Reaction		
n.	Potassium $2\text{K}_{(s)}$	+	Magnesium Chloride $\text{MgCl}_{2(aq)}$	→	Potassium Chloride $2\text{KCl}_{(aq)}$	+	Magnesium $\text{Mg}_{(s)}$
o.	Zinc $\text{Zn}_{(s)}$	+	Lead Sulfate $\text{PbSO}_4(aq)$	→	Zinc Sulfate $\text{ZnSO}_4(aq)$	+	Lead $\text{Pb}_{(s)}$
p.	Magnesium $\text{Mg}_{(s)}$	+	Calcium Iodide $\text{CaI}_2(aq)$	→	No Reaction		
q.	Aluminium $2\text{Al}_{(s)}$	+	Lead Bromide $3\text{PbBr}_{2(aq)}$	→	Aluminium Bromide $2\text{AlBr}_3(aq)$	+	Lead $3\text{Pb}_{(s)}$
r.	Potassium $2\text{K}_{(s)}$	+	Sodium Carbonate $\text{Na}_2\text{CO}_3(aq)$	→	Potassium Carbonate $\text{K}_2\text{CO}_3(aq)$	+	Sodium $2\text{Na}_{(s)}$
s.	Calcium $\text{Ca}_{(s)}$	+	Copper Nitrate $2\text{CuNO}_3(aq)$	→	Calcium Nitrate $\text{Ca}(\text{NO}_3)_2(aq)$	+	Copper $2\text{Cu}_{(s)}$
t.	Zinc $\text{Zn}_{(s)}$	+	Copper Sulfate $\text{Cu}_2(\text{SO}_4)(aq)$	→	Zinc Sulfate $\text{ZnSO}_4(aq)$	+	Copper $2\text{Cu}_{(s)}$