

Exercises: Dissociation and Oxidation numbers

Name the substances below and determine how molecules dissociate (when it applies) and assign oxidation numbers to each element:

Substance	Dissociation	Name
KMnO_4		
FeCl_2		
H_2SO_4		
Ca(OH)_2		
$\text{Na}_2\text{Cr}_2\text{O}_7$		
Ag_2CrO_4		
MnCl_2		
FeCl_3		
CaCO_3		
MgSO_4		
BaSO_3		
CrCl_3		

NO ₂		
H ₂ O ₂		
MnO ₂		
KClO ₃		
NaBrO ₄		
ZnSO ₄		
NaNO ₂		
AgNO ₃		
KI		
NaBr		
CuSO ₄		
HNO ₃		
HCl		
KIO ₃		

$\begin{matrix} +1 & +7 & -2 \\ \text{KMnO}_4 \end{matrix}$	$\text{K}^+ \quad \text{MnO}_4^-$	potassium permanganate
$\begin{matrix} +2 & -1 \\ \text{FeCl}_2 \end{matrix}$	$\text{Fe}^{2+} \quad 2 \text{Cl}^-$	iron (II) chloride
$\begin{matrix} +1 & +6 & -2 \\ \text{H}_2\text{SO}_4 \end{matrix}$	$2 \text{H}^+ \quad \text{SO}_4^{2-}$	sulfuric acid
$\begin{matrix} +2 & -2 & +1 \\ \text{Ca}(\text{OH})_2 \end{matrix}$	$\text{Ca}^{2+} \quad 2 \text{OH}^-$	calcium hydroxide
$\begin{matrix} +1 & +6 & -2 \\ \text{Na}_2\text{Cr}_2\text{O}_7 \end{matrix}$	$2 \text{Na}^+ \quad \text{Cr}_2\text{O}_7^{2-}$	sodium dichromate
$\begin{matrix} +1 & +6 & -2 \\ \text{Ag}_2\text{CrO}_4 \end{matrix}$	$2 \text{Ag}^+ \quad \text{CrO}_4^{2-}$	silver chromate
$\begin{matrix} +2 & -1 \\ \text{MnCl}_2 \end{matrix}$	$\text{Mn}^{2+} \quad 2 \text{Cl}^-$	manganese dichloride
$\begin{matrix} +3 & -1 \\ \text{FeCl}_3 \end{matrix}$	$\text{Fe}^{3+} \quad 3 \text{Cl}^-$	iron trichloride
$\begin{matrix} +2 & +4 & -2 \\ \text{CaCO}_3 \end{matrix}$	$\text{Ca}^{2+} \quad \text{CO}_3^{2-}$	calcium carbonate
$\begin{matrix} +2 & +6 & -2 \\ \text{MgSO}_4 \end{matrix}$	$\text{Mg}^{2+} \quad \text{SO}_4^{2-}$	magnesium sulfate
$\begin{matrix} +2 & +4 & -2 \\ \text{BaSO}_3 \end{matrix}$	$\text{Ba}^{2+} \quad \text{SO}_3^{2-}$	barium sulfite
$\begin{matrix} +3 & -1 \\ \text{CrCl}_3 \end{matrix}$	$\text{Cr}^{3+} \quad 3 \text{Cl}^-$	chromium trichloride

$\begin{matrix} +4 & -2 \\ \text{NO}_2 \end{matrix}$	—	nitrogen dioxide
$\begin{matrix} +1 & -1 \\ \text{H}_2\text{O}_2 \end{matrix}$	—	hydrogen peroxide (oxygenated water)
$\begin{matrix} +4 & -2 \\ \text{MnO}_2 \end{matrix}$	$\text{Mn}^{4+} \quad 2 \text{O}^{2-}$	manganese dioxide
$\begin{matrix} +1 & +5 & -2 \\ \text{KClO}_3 \end{matrix}$	$\text{K}^+ \quad \text{ClO}_3^-$	potassium chlorate
$\begin{matrix} +1 & +7 & -2 \\ \text{NaBrO}_4 \end{matrix}$	$\text{Na}^+ \quad \text{BrO}_4^-$	sodium perbromate
$\begin{matrix} +2 & +6 & -2 \\ \text{ZnSO}_4 \end{matrix}$	$\text{Zn}^{2+} \quad \text{SO}_4^{2-}$	zinc sulfate
$\begin{matrix} +1 & +3 & -2 \\ \text{NaNO}_2 \end{matrix}$	$\text{Na}^+ \quad \text{NO}_2^-$	sodium nitrite
$\begin{matrix} +1 & +5 & -2 \\ \text{AgNO}_3 \end{matrix}$	$\text{Ag}^+ \quad \text{NO}_3^-$	silver nitrate
$\begin{matrix} +1 & -1 \\ \text{KI} \end{matrix}$	$\text{K}^+ \quad \text{I}^-$	potassium iodide
$\begin{matrix} +1 & -1 \\ \text{NaBr} \end{matrix}$	$\text{Na}^+ \quad \text{Br}^-$	sodium bromide
$\begin{matrix} +2 & +6 & -2 \\ \text{CuSO}_4 \end{matrix}$	$\text{Cu}^{2+} \quad \text{SO}_4^{2-}$	copper (II) sulfate
$\begin{matrix} +1 & +5 & -2 \\ \text{HNO}_3 \end{matrix}$	$\text{H}^+ \quad \text{NO}_3^-$	nitric acid
$\begin{matrix} +1 & -1 \\ \text{HCl} \end{matrix}$	$\text{H}^+ \quad \text{Cl}^-$	hydrochloric acid (hydrogen chloride)
$\begin{matrix} +1 & +5 & -2 \\ \text{KIO}_3 \end{matrix}$	$\text{K}^+ \quad \text{IO}_3^-$	potassium iodate