



# Chem!stry

Name: ..... ( )

Class: .....

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## Writing Balanced Chemical Equations for the Reactions Between Acids, Metals, Bases and Carbonates – Answers

- 1)  $2\text{HCl}_{(\text{aq})} + \text{Mg}_{(\text{s})} \rightarrow \text{MgCl}_{2(\text{aq})} + \text{H}_{2(\text{g})}$
- 2)  $\text{HCl}_{(\text{aq})} + \text{NaOH}_{(\text{aq})} \rightarrow \text{NaCl}_{(\text{aq})} + \text{H}_2\text{O}_{(\text{l})}$
- 3)  $2\text{HCl}_{(\text{aq})} + \text{Na}_2\text{CO}_{3(\text{s})} \rightarrow 2\text{NaCl}_{(\text{aq})} + \text{H}_2\text{O}_{(\text{l})} + \text{CO}_{2(\text{g})}$
- 4)  $2\text{HCl}_{(\text{aq})} + \text{CuO}_{(\text{s})} \rightarrow \text{CuCl}_{2(\text{aq})} + \text{H}_2\text{O}_{(\text{l})}$
- 5)  $6\text{HCl}_{(\text{aq})} + \text{Fe}_2\text{O}_{3(\text{s})} \rightarrow 2\text{FeCl}_{3(\text{aq})} + 3\text{H}_2\text{O}_{(\text{l})}$
- 6)  $2\text{HCl}_{(\text{aq})} + \text{Ca}(\text{OH})_{2(\text{s})} \rightarrow \text{CaCl}_{2(\text{aq})} + 2\text{H}_2\text{O}_{(\text{l})}$
- 7)  $2\text{HNO}_{3(\text{aq})} + \text{Mg}_{(\text{s})} \rightarrow \text{Mg}(\text{NO}_3)_{2(\text{aq})} + \text{H}_{2(\text{g})}$
- 8)  $\text{HNO}_{3(\text{aq})} + \text{NaOH}_{(\text{aq})} \rightarrow \text{NaNO}_{3(\text{aq})} + \text{H}_2\text{O}_{(\text{l})}$
- 9)  $2\text{HNO}_{3(\text{aq})} + \text{Na}_2\text{CO}_{3(\text{s})} \rightarrow 2\text{NaNO}_{3(\text{aq})} + \text{H}_2\text{O}_{(\text{l})} + \text{CO}_{2(\text{g})}$
- 10)  $2\text{HNO}_{3(\text{aq})} + \text{CuO}_{(\text{s})} \rightarrow \text{Cu}(\text{NO}_3)_{2(\text{aq})} + \text{H}_2\text{O}_{(\text{l})}$
- 11)  $6\text{HNO}_{3(\text{aq})} + \text{Fe}_2\text{O}_{3(\text{s})} \rightarrow 2\text{Fe}(\text{NO}_3)_{3(\text{aq})} + 3\text{H}_2\text{O}_{(\text{l})}$
- 12)  $2\text{HNO}_{3(\text{aq})} + \text{Ca}(\text{OH})_{2(\text{s})} \rightarrow \text{Ca}(\text{NO}_3)_{2(\text{aq})} + 2\text{H}_2\text{O}_{(\text{l})}$
- 13)  $2\text{CH}_3\text{COOH}_{(\text{aq})} + \text{Mg}_{(\text{s})} \rightarrow (\text{CH}_3\text{COO})_2\text{Mg}_{(\text{aq})} + \text{H}_{2(\text{g})}$
- 14)  $\text{CH}_3\text{COOH}_{(\text{aq})} + \text{NaOH}_{(\text{aq})} \rightarrow \text{CH}_3\text{COONa}_{(\text{aq})} + \text{H}_2\text{O}_{(\text{l})}$
- 15)  $2\text{CH}_3\text{COOH}_{(\text{aq})} + \text{Na}_2\text{CO}_{3(\text{s})} \rightarrow 2\text{CH}_3\text{COONa}_{(\text{aq})} + \text{H}_2\text{O}_{(\text{l})} + \text{CO}_{2(\text{g})}$
- 16)  $2\text{CH}_3\text{COOH}_{(\text{aq})} + \text{CuO}_{(\text{s})} \rightarrow (\text{CH}_3\text{COO})_2\text{Cu}_{(\text{aq})} + \text{H}_2\text{O}_{(\text{l})}$
- 17)  $6\text{CH}_3\text{COOH}_{(\text{aq})} + \text{Fe}_2\text{O}_{3(\text{s})} \rightarrow 2(\text{CH}_3\text{COO})_3\text{Fe}_{(\text{aq})} + 3\text{H}_2\text{O}_{(\text{l})}$
- 18)  $2\text{CH}_3\text{COOH}_{(\text{aq})} + \text{Ca}(\text{OH})_{2(\text{s})} \rightarrow (\text{CH}_3\text{COO})_2\text{Ca}_{(\text{aq})} + 2\text{H}_2\text{O}_{(\text{l})}$
- 19)  $\text{H}_2\text{SO}_{4(\text{aq})} + \text{Mg}_{(\text{s})} \rightarrow \text{MgSO}_{4(\text{aq})} + \text{H}_{2(\text{g})}$
- 20)  $\text{H}_2\text{SO}_{4(\text{aq})} + 2\text{NaOH}_{(\text{aq})} \rightarrow \text{Na}_2\text{SO}_{4(\text{aq})} + 2\text{H}_2\text{O}_{(\text{l})}$
- 21)  $\text{H}_2\text{SO}_{4(\text{aq})} + \text{Na}_2\text{CO}_{3(\text{s})} \rightarrow \text{Na}_2\text{SO}_{4(\text{aq})} + \text{H}_2\text{O}_{(\text{l})} + \text{CO}_{2(\text{g})}$
- 22)  $\text{H}_2\text{SO}_{4(\text{aq})} + \text{CuO}_{(\text{s})} \rightarrow \text{CuSO}_{4(\text{aq})} + \text{H}_2\text{O}_{(\text{l})}$

- 23)  $3\text{H}_2\text{SO}_{4(\text{aq})} + \text{Fe}_2\text{O}_{3(\text{s})} \rightarrow \text{Fe}_2(\text{SO}_4)_{3(\text{aq})} + 3\text{H}_2\text{O}_{(\text{l})}$
- 24)  $\text{H}_2\text{SO}_{4(\text{aq})} + \text{Ca}(\text{OH})_{2(\text{s})} \rightarrow \text{CaSO}_{4(\text{s})} + 2\text{H}_2\text{O}_{(\text{l})}$
- 25)  $2\text{H}_3\text{PO}_{4(\text{aq})} + 3\text{Mg}_{(\text{s})} \rightarrow \text{Mg}_3(\text{PO}_4)_{2(\text{s})} + 3\text{H}_2_{(\text{g})}$
- 26)  $\text{H}_3\text{PO}_{4(\text{aq})} + 3\text{NaOH}_{(\text{aq})} \rightarrow \text{Na}_3\text{PO}_{4(\text{aq})} + 3\text{H}_2\text{O}_{(\text{l})}$
- 27)  $2\text{H}_3\text{PO}_{4(\text{aq})} + 3\text{Na}_2\text{CO}_{3(\text{s})} \rightarrow 2\text{Na}_3\text{PO}_{4(\text{aq})} + 3\text{H}_2\text{O}_{(\text{l})} + 3\text{CO}_{2(\text{g})}$
- 28)  $2\text{H}_3\text{PO}_{4(\text{aq})} + 3\text{CuO}_{(\text{s})} \rightarrow \text{Cu}_3(\text{PO}_4)_{2(\text{s})} + 3\text{H}_2\text{O}_{(\text{l})}$
- 29)  $2\text{H}_3\text{PO}_{4(\text{aq})} + \text{Fe}_2\text{O}_{3(\text{s})} \rightarrow 2\text{FePO}_{4(\text{s})} + 3\text{H}_2\text{O}_{(\text{l})}$
- 30)  $2\text{H}_3\text{PO}_{4(\text{aq})} + 3\text{Ca}(\text{OH})_{2(\text{s})} \rightarrow \text{Ca}_3(\text{PO}_4)_{2(\text{aq})} + 6\text{H}_2\text{O}_{(\text{l})}$
- 31)  $2\text{HF}_{(\text{aq})} + \text{Mg}_{(\text{s})} \rightarrow \text{MgF}_{2(\text{aq})} + \text{H}_{2(\text{g})}$
- 32)  $\text{HF}_{(\text{aq})} + \text{NaOH}_{(\text{aq})} \rightarrow \text{NaF}_{(\text{aq})} + \text{H}_2\text{O}_{(\text{l})}$
- 33)  $2\text{HF}_{(\text{aq})} + \text{Na}_2\text{CO}_{3(\text{s})} \rightarrow 2\text{NaF}_{(\text{aq})} + \text{H}_2\text{O}_{(\text{l})} + \text{CO}_{2(\text{g})}$
- 34)  $2\text{HF}_{(\text{aq})} + \text{CuO}_{(\text{s})} \rightarrow \text{CuF}_{2(\text{aq})} + \text{H}_2\text{O}_{(\text{l})}$
- 35)  $6\text{HF}_{(\text{aq})} + \text{Fe}_2\text{O}_{3(\text{s})} \rightarrow 2\text{FeF}_{3(\text{aq})} + 3\text{H}_2\text{O}_{(\text{l})}$
- 36)  $2\text{HF}_{(\text{aq})} + \text{Ca}(\text{OH})_{2(\text{s})} \rightarrow \text{CaF}_{2(\text{aq})} + 2\text{H}_2\text{O}_{(\text{l})}$