

Chemical Equations and Balancing Reactions Practice KEY – Types of Reactions

1) combustion	the word combustion or burned is in the question
2) double replacement	2 ionic compounds or 1 ionic and 1 acid are given
3) combination	2 elements are given
4) combustion	the word combustion or burned is in the question
5) neutralization (or double replacement)	an acid and a base are given
6) decomposition	a single compound is heated (NOT burned)
7) combustion	the word combustion or burned is in the question
8) single replacement	an element and a compound are given
9) combination	2 elements are given
10) single replacement	an element and a compound are given
11) combustion	the word combustion or burned is in the question
12) single replacement	an element and a compound are given
13) double replacement	2 ionic compounds or 1 ionic and 1 acid are given
14) combustion	the word combustion or burned is in the question
15) decomposition	a single compound is heated (NOT burned)
16) combination	2 elements are given
17) neutralization (or double replacement)	an acid and a base are given
18) single replacement	an element and a compound are given
19) double replacement	2 ionic compounds or 1 ionic and 1 acid are given
20) neutralization (or double replacement)	an acid and a base are given
21) decomposition	a single compound is heated (NOT burned)
22) single replacement	an element and a compound are given
23) decomposition	a single compound is heated (NOT burned)
24) combustion	the word combustion or burned is in the question
25) combination	2 elements are given
26) double replacement	2 ionic compounds or 1 ionic and 1 acid are given
27) single replacement	an element and a compound are given
28) neutralization (or double replacement)	an acid and a base are given
29) single replacement	an element and a compound are given
30) single replacement	an element and a compound are given
31) combination	2 elements are given
32) decomposition	a single compound is heated (NOT burned)
33) single replacement	an element and a compound are given
34) neutralization (or double replacement)	an acid and a base are given
35) decomposition	a single compound is heated (NOT burned)
36) double replacement	2 ionic compounds or 1 ionic and 1 acid are given
37) neutralization (or double replacement)	water and an ionic compound were the products
38) combination	2 elements are given
39) single replacement	an element and a compound are given
40) double replacement	2 ionic compounds or 1 ionic and 1 acid are given

Chemical Equations and Balancing Reactions Practice KEY – Reactants Translation to Formulas

- 1) $\text{C}_{40}\text{H}_{56} + \text{O}_2 \rightarrow$
- 2) $\text{Na}_2\text{CrO}_4 + \text{Bi}(\text{NO}_2)_5 \rightarrow$
- 3) $\text{Co}_{(\text{s})} + \text{O}_{2(\text{g})} \rightarrow$
- 4) $\text{C}_{21}\text{H}_{30}\text{O}_2 + \text{O}_2 \rightarrow$
- 5) $\text{H}_2\text{S}_{(\text{sq})} + \text{KOH} \rightarrow$
- 6) $\text{CuCO}_3 \rightarrow$
- 7) $\text{C}_{30}\text{H}_{62} + \text{O}_2 \rightarrow$
- 8) $\text{HOH}_{(\text{l})} + \text{Mg}_{(\text{s})} \rightarrow$
- 9) $\text{Ca}_{(\text{s})} + \text{P}_4 \rightarrow$
- 10) $\text{Mg}_{(\text{s})} + \text{HC}_2\text{H}_3\text{O}_{2(\text{aq})} \rightarrow$
- 11) $\text{C}_6\text{H}_5\text{CO}_2\text{H} + \text{O}_2 \rightarrow$
- 12) $\text{H}_2\text{SO}_{4(\text{aq})} + \text{Cu}_{(\text{s})} \rightarrow$
- 13) $\text{Li}_3\text{PO}_{4(\text{aq})} + \text{SrCl}_{2(\text{aq})} \rightarrow$
- 14) $\text{C}_8\text{H}_{17}\text{OH} + \text{O}_2 \rightarrow$
- 15) $\text{K}_2\text{CO}_{3(\text{s})} \rightarrow$
- 16) $\text{I}_{2(\text{s})} + \text{Al}_{(\text{s})} \rightarrow$
- 17) $\text{H}_2\text{SO}_{4(\text{aq})} + \text{Al}(\text{OH})_{3(\text{aq})} \rightarrow$
- 18) $\text{Li}_{(\text{s})} + \text{HOH}_{(\text{l})} \rightarrow$
- 19) $\text{CuCO}_{3(\text{aq})} + \text{Sn}(\text{BrO}_2)_{4(\text{aq})} \rightarrow$
- 20) $\text{HC}_2\text{H}_3\text{O}_{2(\text{aq})} + \text{LiOH} \rightarrow$
- 21) $\text{Sn}(\text{HCO}_3)_4 \rightarrow$
- 22) $\text{Zn}_{(\text{s})} + \text{HCl}_{(\text{aq})} \rightarrow$
- 23) $\text{Ba}(\text{HCO}_3)_{2(\text{s})} \rightarrow$
- 24) $\text{C}_9\text{H}_{20} + \text{O}_2 \rightarrow$
- 25) $\text{Cs}_{(\text{s})} + \text{H}_{2(\text{g})} \rightarrow$
- 26) $(\text{NH}_4)_2\text{S} + \text{Cr}(\text{ClO}_4)_3 \rightarrow$
- 27) $\text{Fe}(\text{NO}_3)_{2(\text{aq})} + \text{Zn}_{(\text{s})} \rightarrow$
- 28) $\text{H}_2\text{CO}_{3(\text{aq})} + \text{NaOH} \rightarrow$
- 29) $\text{Mn}_{(\text{s})} + \text{Al}(\text{NO}_3)_{3(\text{aq})} \rightarrow$
- 30) $\text{Ba}_{(\text{s})} + \text{HOH}_{(\text{l})} \rightarrow$
- 31) $\text{Cr}_{(\text{s})} + \text{S}_8 \rightarrow$
- 32) $\text{Ni}_2(\text{CO}_3)_3 \rightarrow$
- 33) $\text{Pb}(\text{ClO}_3)_{2(\text{aq})} + \text{Sr}_{(\text{s})} \rightarrow$
- 34) $\text{Ba}(\text{OH})_{2(\text{aq})} + \text{H}_3\text{PO}_{4(\text{aq})} \rightarrow$
- 35) $\text{Cr}(\text{HCO}_3)_{3(\text{s})} \rightarrow$
- 36) $\text{HCl}_{(\text{aq})} + \text{Sb}_2\text{S}_3 \rightarrow$
- 37) $\rightarrow \text{HOH}_{(\text{l})} + \text{Mg}(\text{NO}_3)_2$
- 38) $\text{Na}_{(\text{s})} + \text{Se}_{(\text{s})} \rightarrow$
- 39) $\text{Fe}(\text{BrO}_2)_{2(\text{aq})} + \text{Cd}_{(\text{s})} \rightarrow$
- 40) $\text{Pb}(\text{C}_2\text{H}_3\text{O}_2)_2 + \text{Fe}(\text{IO})_3 \rightarrow$

**Chemical Equations and Balancing Reactions Practice KEY – Completed Reactions
(Unbalanced)**

- 1) $\text{C}_{40}\text{H}_{56} + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
- 2) $\text{Na}_2\text{CrO}_4 + \text{Bi}(\text{NO}_2)_5 \rightarrow \text{NaNO}_2 + \text{Bi}_2(\text{CrO}_4)_5$
- 3) $\text{Co}_{(\text{s})} + \text{O}_{2(\text{g})} \rightarrow \text{Co}_2\text{O}_3$
- 4) $\text{C}_{21}\text{H}_{30}\text{O}_2 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
- 5) $\text{H}_2\text{S}_{(\text{sq})} + \text{KOH} \rightarrow \text{HOH} + \text{K}_2\text{S}$
- 6) $\text{CuCO}_3 \rightarrow \text{CuO} + \text{CO}_2$
- 7) $\text{C}_{30}\text{H}_{62} + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
- 8) $\text{HOH}_{(\text{l})} + \text{Mg}_{(\text{s})} \rightarrow \text{N.R.}$
- 9) $\text{Ca}_{(\text{s})} + \text{P}_4 \rightarrow \text{Ca}_3\text{P}_2$
- 10) $\text{Mg}_{(\text{s})} + \text{HC}_2\text{H}_3\text{O}_{2(\text{aq})} \rightarrow \text{Mg}(\text{C}_2\text{H}_3\text{O}_2)_2 + \text{H}_{2(\text{g})}$
- 11) $\text{C}_6\text{H}_5\text{CO}_2\text{H} + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
- 12) $\text{H}_2\text{SO}_{4(\text{aq})} + \text{Cu}_{(\text{s})} \rightarrow \text{N.R.}$
- 13) $\text{Li}_3\text{PO}_{4(\text{aq})} + \text{SrCl}_{2(\text{aq})} \rightarrow \text{LiCl} + \text{Sr}_3(\text{PO}_4)_2$
- 14) $\text{C}_8\text{H}_{17}\text{OH} + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
- 15) $\text{K}_2\text{CO}_{3(\text{s})} \rightarrow \text{K}_2\text{O} + \text{CO}_{2(\text{g})}$
- 16) $\text{I}_{2(\text{s})} + \text{Al}_{(\text{s})} \rightarrow \text{AlI}_3$
- 17) $\text{H}_2\text{SO}_{4(\text{aq})} + \text{Al}(\text{OH})_{3(\text{aq})} \rightarrow \text{HOH}_{(\text{l})} + \text{Al}_2(\text{SO}_4)_3$
- 18) $\text{Li}_{(\text{s})} + \text{HOH}_{(\text{l})} \rightarrow \text{LiOH} + \text{H}_{2(\text{g})}$
- 19) $\text{CuCO}_{3(\text{aq})} + \text{Sn}(\text{BrO}_2)_{4(\text{aq})} \rightarrow \text{Cu}(\text{BrO}_2)_2 + \text{Sn}(\text{CO}_3)_2$
- 20) $\text{HC}_2\text{H}_3\text{O}_{2(\text{aq})} + \text{LiOH} \rightarrow \text{LiC}_2\text{H}_3\text{O}_2 + \text{HOH}$
- 21) $\text{Sn}(\text{HCO}_3)_4 \rightarrow \text{Sn}(\text{CO}_3)_2 + \text{H}_2\text{O}_{(\text{g})} + \text{CO}_{2(\text{g})}$
- 22) $\text{Zn}_{(\text{s})} + \text{HCl}_{(\text{aq})} \rightarrow \text{ZnCl}_2 + \text{H}_{2(\text{g})}$
- 23) $\text{Ba}(\text{HCO}_3)_{2(\text{s})} \rightarrow \text{BaCO}_3 + \text{H}_2\text{O}_{(\text{g})} + \text{CO}_{2(\text{g})}$
- 24) $\text{C}_9\text{H}_{20} + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
- 25) $\text{Cs}_{(\text{s})} + \text{H}_{2(\text{g})} \rightarrow \text{CsH}$
- 26) $(\text{NH}_4)_2\text{S} + \text{Cr}(\text{ClO}_4)_3 \rightarrow \text{NH}_4\text{ClO}_4 + \text{Cr}_2\text{S}_3$
- 27) $\text{Fe}(\text{NO}_3)_{2(\text{aq})} + \text{Zn}_{(\text{s})} \rightarrow \text{Zn}(\text{NO}_3)_2 + \text{Fe}_{(\text{s})}$
- 28) $\text{H}_2\text{CO}_{3(\text{aq})} + \text{NaOH} \rightarrow \text{Na}_2\text{CO}_3 + \text{HOH}_{(\text{l})}$
- 29) $\text{Mn}_{(\text{s})} + \text{Al}(\text{NO}_3)_{3(\text{aq})} \rightarrow \text{N.R.}$
- 30) $\text{Ba}_{(\text{s})} + \text{HOH}_{(\text{l})} \rightarrow \text{Ba}(\text{OH})_2 + \text{H}_{2(\text{g})}$
- 31) $\text{Cr}_{(\text{s})} + \text{S}_8 \rightarrow \text{Cr}_2\text{S}_3$
- 32) $\text{Ni}_2(\text{CO}_3)_3 \rightarrow \text{Ni}_2\text{O}_3 + \text{CO}_{2(\text{g})}$
- 33) $\text{Pb}(\text{ClO}_3)_{2(\text{aq})} + \text{Sr}_{(\text{s})} \rightarrow \text{Ni}(\text{ClO}_3)_2 + \text{Sr}_{(\text{s})}$
- 34) $\text{Ba}(\text{OH})_{2(\text{aq})} + \text{H}_3\text{PO}_{4(\text{aq})} \rightarrow \text{Ba}_3(\text{PO}_4)_2 + \text{HOH}_{(\text{l})}$
- 35) $\text{Cr}(\text{HCO}_3)_{3(\text{s})} \rightarrow \text{Cr}_2(\text{CO}_3)_3 + \text{H}_2\text{O}_{(\text{g})} + \text{CO}_{2(\text{g})}$
- 36) $\text{HCl}_{(\text{aq})} + \text{Sb}_2\text{S}_3 \rightarrow \text{H}_2\text{S}_{(\text{aq})} + \text{SbCl}_3$
- 37) $\text{Mg}(\text{OH})_2 + \text{HNO}_{3(\text{aq})} \rightarrow \text{HOH}_{(\text{l})} + \text{Mg}(\text{NO}_3)_2$
- 38) $\text{Na}_{(\text{s})} + \text{Se}_{(\text{s})} \rightarrow \text{Na}_2\text{Se}$
- 39) $\text{Fe}(\text{BrO}_2)_{2(\text{aq})} + \text{Cd}_{(\text{s})} \rightarrow \text{N.R.}$
- 40) $\text{Pb}(\text{C}_2\text{H}_3\text{O}_2)_2 + \text{Fe}(\text{IO})_3 \rightarrow \text{Pb}(\text{IO})_2 + \text{Fe}(\text{C}_2\text{H}_3\text{O}_2)_3$

Chemical Equations and Balancing Reactions Practice KEY – Balanced Reactions

- 1) $\text{C}_{40}\text{H}_{56} + 54 \text{O}_{2(g)} \rightarrow 40 \text{CO}_{2(g)} + 28 \text{H}_2\text{O}_{(g)}$
- 2) $5 \text{Na}_2\text{CrO}_4 + 2 \text{Bi}(\text{NO}_2)_5 \rightarrow 10 \text{NaNO}_2 + \text{Bi}_2(\text{CrO}_4)_5$
- 3) $4 \text{Co}_{(s)} + 3 \text{O}_{2(g)} \rightarrow 2 \text{Co}_2\text{O}_3$
- 4) $2 \text{C}_{21}\text{H}_{30}\text{O}_2 + 55 \text{O}_{2(g)} \rightarrow 42 \text{CO}_{2(g)} + 30 \text{H}_2\text{O}_{(l)}$
- 5) $\text{H}_2\text{S}_{(aq)} + 2 \text{KOH} \rightarrow 2 \text{HOH} + \text{K}_2\text{S}$
- 6) $\text{CuCO}_3 \rightarrow \text{CuO} + \text{CO}_2$
- 7) $2 \text{C}_{30}\text{H}_{62} + 91 \text{O}_{2(g)} \rightarrow 60 \text{CO}_{2(g)} + 62 \text{H}_2\text{O}_{(g)}$
- 8) $\text{HOH}_{(l)} + \text{Mg}_{(s)} \rightarrow \text{no reaction}$
- 9) $6 \text{Ca}_{(s)} + \text{P}_4 \rightarrow 2 \text{Ca}_3\text{P}_2$
- 10) $\text{Mg}_{(s)} + 2 \text{HC}_2\text{H}_3\text{O}_{2(aq)} \rightarrow \text{Mg}(\text{C}_2\text{H}_3\text{O}_2)_2 + \text{H}_{2(g)}$
- 11) $2 \text{C}_6\text{H}_5\text{CO}_2\text{H} + 15 \text{O}_{2(g)} \rightarrow 14 \text{CO}_{2(g)} + 6 \text{H}_2\text{O}_{(g)}$
- 12) $\text{H}_2\text{SO}_{4(aq)} + \text{Cu}_{(s)} \rightarrow \text{no reaction}$
- 13) $2 \text{Li}_3\text{PO}_{4(aq)} + 3 \text{SrCl}_{2(aq)} \rightarrow 6 \text{LiCl} + \text{Sr}_3(\text{PO}_4)_2$
- 14) $\text{C}_8\text{H}_{17}\text{OH} + 12 \text{O}_{2(g)} \rightarrow 8 \text{CO}_{2(g)} + 9 \text{H}_2\text{O}_{(g)}$
- 15) $\text{K}_2\text{CO}_{3(s)} \rightarrow \text{K}_2\text{O} + \text{CO}_{2(g)}$
- 16) $3 \text{I}_{2(s)} + 2 \text{Al}_{(s)} \rightarrow 2 \text{AlI}_3$
- 17) $3 \text{H}_2\text{SO}_{4(aq)} + 2 \text{Al}(\text{OH})_{3(aq)} \rightarrow 6 \text{HOH}_{(l)} + \text{Al}_2(\text{SO}_4)_3$
- 18) $2 \text{Li}_{(s)} + 2 \text{HOH}_{(l)} \rightarrow 2 \text{LiOH} + \text{H}_{2(g)}$
- 19) $2 \text{CuCO}_{3(aq)} + \text{Sn}(\text{BrO}_2)_{4(aq)} \rightarrow 2 \text{Cu}(\text{BrO}_2)_2 + \text{Sn}(\text{CO}_3)_2$
- 20) $\text{HC}_2\text{H}_3\text{O}_{2(aq)} + \text{LiOH} \rightarrow \text{LiC}_2\text{H}_3\text{O}_2 + \text{HOH}$
- 21) $\text{Sn}(\text{HCO}_3)_4 \rightarrow \text{Sn}(\text{CO}_3)_2 + 2 \text{H}_2\text{O}_{(g)} + 2 \text{CO}_{2(g)}$
- 22) $\text{Zn}_{(s)} + 2 \text{HCl}_{(aq)} \rightarrow \text{ZnCl}_2 + \text{H}_{2(g)}$
- 23) $\text{Ba}(\text{HCO}_3)_{2(s)} \rightarrow \text{BaCO}_3 + \text{H}_2\text{O}_{(g)} + \text{CO}_{2(g)}$
- 24) $\text{C}_9\text{H}_{20} + 14 \text{O}_{2(g)} \rightarrow 9 \text{CO}_{2(g)} + 10 \text{H}_2\text{O}_{(g)}$
- 25) $2 \text{Cs}_{(s)} + \text{H}_{2(g)} \rightarrow 2 \text{CsH}$
- 26) $3 (\text{NH}_4)_2\text{S} + 2 \text{Cr}(\text{ClO}_4)_3 \rightarrow 6 \text{NH}_4\text{ClO}_4 + \text{Cr}_2\text{S}_3$
- 27) $\text{Fe}(\text{NO}_3)_{2(aq)} + \text{Zn}_{(s)} \rightarrow \text{Zn}(\text{NO}_3)_2 + \text{Fe}_{(s)}$
- 28) $\text{H}_2\text{CO}_{3(aq)} + 2 \text{NaOH} \rightarrow \text{Na}_2\text{CO}_3 + 2 \text{HOH}_{(l)}$
- 29) $\text{Mn}_{(s)} + \text{Al}(\text{NO}_3)_{3(aq)} \rightarrow \text{no reaction}$
- 30) $\text{Ba}_{(s)} + 2 \text{HOH}_{(l)} \rightarrow \text{Ba}(\text{OH})_2 + \text{H}_{2(g)}$
- 31) $16 \text{Cr}_{(s)} + 3 \text{S}_8 \rightarrow 8 \text{Cr}_2\text{S}_3$
- 32) $\text{Ni}_2(\text{CO}_3)_3 \rightarrow \text{Ni}_2\text{O}_3 + 3 \text{CO}_{2(g)}$
- 33) $\text{Pb}(\text{ClO}_3)_{2(aq)} + \text{Sr}_{(s)} \rightarrow \text{Sr}(\text{ClO}_3)_2 + \text{Pb}_{(s)}$
- 34) $3 \text{Ba}(\text{OH})_{2(aq)} + 2 \text{H}_3\text{PO}_{4(aq)} \rightarrow \text{Ba}_3(\text{PO}_4)_2 + 6 \text{HOH}_{(l)}$
- 35) $2 \text{Cr}(\text{HCO}_3)_{3(s)} \rightarrow \text{Cr}_2(\text{CO}_3)_3 + 3 \text{H}_2\text{O}_{(g)} + 3 \text{CO}_{2(g)}$
- 36) $6 \text{HCl}_{(aq)} + \text{Sb}_2\text{S}_3 \rightarrow 3 \text{H}_2\text{S}_{(aq)} + 2 \text{SbCl}_3$
- 37) $\text{Mg}(\text{OH})_2 + 2 \text{HNO}_{3(aq)} \rightarrow 2 \text{HOH}_{(l)} + \text{Mg}(\text{NO}_3)_2$
- 38) $2 \text{Na}_{(s)} + \text{Se}_{(s)} \rightarrow \text{Na}_2\text{Se}$
- 39) $\text{Fe}(\text{BrO}_2)_{2(aq)} + \text{Cd}_{(s)} \rightarrow \text{no reaction}$
- 40) $3 \text{Pb}(\text{C}_2\text{H}_3\text{O}_2)_2 + 2 \text{Fe}(\text{IO})_3 \rightarrow 3 \text{Pb}(\text{IO})_2 + 2 \text{Fe}(\text{C}_2\text{H}_3\text{O}_2)_3$