

CEM 111
Additional Equation Balancing Exercise Answers

Balance the following and indicate the type of chemical reaction.

1. $\text{Li}_2\text{O} + \text{H}_2\text{O} \rightarrow 2\text{LiOH}$ combination
2. $2\text{HgO} \rightarrow 2\text{Hg} + \text{O}_2$ decomposition
3. $\text{CaCl}_2 + 2\text{H}_2\text{O} \rightarrow \text{Ca}(\text{OH})_2 + 2\text{HCl}$ double replacement
4. $2\text{HCl} + \text{H}_2\text{SO}_4 \rightarrow 2\text{H}_2\text{O} + \text{SO}_2$ double replacement
neutralization
5. $2\text{KClO}_3 \rightarrow 2\text{KCl} + \text{O}_2$ decomposition
6. $2\text{Al} + 6\text{HCl} \rightarrow 2\text{AlCl}_3 + 3\text{H}_2$ single replacement
7. $\text{Fe}_2(\text{SO}_4)_3 + 3\text{Ba}(\text{OH})_2 \rightarrow 3\text{BaSO}_4(\text{s}) + 2\text{Fe}(\text{OH})_3(\text{s})$
double replacement - precipitation
8. $2\text{Al} + 3\text{CuSO}_4 \rightarrow \text{Al}_2(\text{SO}_4)_3 + 3\text{Cu}$ single replacement
9. $3\text{Mg} + \text{N}_2 \rightarrow \text{Mg}_3\text{N}_2$ combination
10. $3\text{FeCl}_2 + 2\text{Na}_3\text{PO}_4 \rightarrow \text{Fe}_3(\text{PO}_4)_2(\text{s}) + 6\text{NaCl}$
double replacement - precipitation
11. $\text{CuSO}_4 \cdot 2\text{H}_2\text{O} \rightarrow \text{CuSO}_4 + 2\text{H}_2\text{O}$ decomposition
12. $2\text{C}_2\text{H}_5\text{OH} + 11\text{O}_2 \rightarrow 8\text{CO}_2 + 8\text{H}_2\text{O}$ combustion
13. $\text{NaHCO}_3 + \text{HCl} \rightarrow \text{NaCl} + \text{CO}_2 + \text{H}_2\text{O}$
double replacement - gas formation & nonelectrolyte formation
(see didn't cover this)
(H_2CO_3 decomposes to $\text{CO}_2 + \text{H}_2\text{O}$)