

Balancing and Classifying Chemical Equations

Directions: First, balance each of the chemical equations below. Then, classify each reaction as **synthesis**, **decomposition**, **single-replacement**, **double-replacement** or **combustion**.

Balance the equation...

...and classify it.

1. $\underline{\quad 2 \quad} \text{Sb} + \underline{\quad 3 \quad} \text{Cl}_2 \rightarrow \underline{\quad 2 \quad} \text{SbCl}_3$ synthesis
2. $\underline{\quad 2 \quad} \text{Mg} + \underline{\quad \quad} \text{O}_2 \rightarrow \underline{\quad 2 \quad} \text{MgO}$ synthesis
3. $\underline{\quad \quad} \text{CaCl}_2 \rightarrow \underline{\quad \quad} \text{Ca} + \underline{\quad \quad} \text{Cl}_2$ decomposition
4. $\underline{\quad 2 \quad} \text{NaClO}_3 \rightarrow \underline{\quad 2 \quad} \text{NaCl} + \underline{\quad 3 \quad} \text{O}_2$ decomposition
5. $\underline{\quad \quad} \text{Fe} + \underline{\quad 2 \quad} \text{HCl} \rightarrow \underline{\quad \quad} \text{FeCl}_2 + \underline{\quad \quad} \text{H}_2$ single replacement
6. $\underline{\quad \quad} \text{CuO} + \underline{\quad \quad} \text{H}_2 \rightarrow \underline{\quad \quad} \text{Cu} + \underline{\quad \quad} \text{H}_2\text{O}$ single replacement
7. $\underline{\quad 2 \quad} \text{Al} + \underline{\quad 3 \quad} \text{H}_2\text{SO}_4 \rightarrow \underline{\quad \quad} \text{Al}_2(\text{SO}_4)_3 + \underline{\quad 3 \quad} \text{H}_2$ single replacement
8. $\underline{\quad \quad} \text{MgBr}_2 + \underline{\quad \quad} \text{Cl}_2 \rightarrow \underline{\quad \quad} \text{MgCl}_2 + \underline{\quad \quad} \text{Br}_2$ single replacement
9. $\underline{\quad \quad} \text{SnO}_2 + \underline{\quad 2 \quad} \text{C} \rightarrow \underline{\quad \quad} \text{Sn} + \underline{\quad 2 \quad} \text{CO}$ single replacement
10. $\underline{\quad \quad} \text{Pb}(\text{NO}_3)_2 + \underline{\quad \quad} \text{H}_2\text{S} \rightarrow \underline{\quad \quad} \text{PbS} + \underline{\quad 2 \quad} \text{HNO}_3$ double replacement
11. $\underline{\quad 2 \quad} \text{HgO} \rightarrow \underline{\quad 2 \quad} \text{Hg} + \underline{\quad \quad} \text{O}_2$ decomposition
12. $\underline{\quad 2 \quad} \text{KClO}_3 \rightarrow \underline{\quad 2 \quad} \text{KCl} + \underline{\quad 3 \quad} \text{O}_2$ decomposition
13. $\underline{\quad \quad} \text{N}_2 + \underline{\quad 3 \quad} \text{H}_2 \rightarrow \underline{\quad 2 \quad} \text{NH}_3$ synthesis
14. $\underline{\quad 2 \quad} \text{NaBr} + \underline{\quad \quad} \text{Cl}_2 \rightarrow \underline{\quad 2 \quad} \text{NaCl} + \underline{\quad \quad} \text{Br}_2$ single replacement
15. $\underline{\quad \quad} \text{Zn} + \underline{\quad 2 \quad} \text{AgNO}_3 \rightarrow \underline{\quad \quad} \text{Zn}(\text{NO}_3)_2 + \underline{\quad 2 \quad} \text{Ag}$ single replacement
16. $\underline{\quad \quad} \text{Sn} + \underline{\quad 2 \quad} \text{Cl}_2 \rightarrow \underline{\quad \quad} \text{SnCl}_4$ synthesis
17. $\underline{\quad \quad} \text{Ba}(\text{OH})_2 \rightarrow \underline{\quad \quad} \text{BaO} + \underline{\quad \quad} \text{H}_2\text{O}$ decomposition
18. $\underline{\quad \quad} \text{Mg}(\text{OH})_2 + \underline{\quad 2 \quad} \text{HCl} \rightarrow \underline{\quad \quad} \text{MgCl}_2 + \underline{\quad 2 \quad} \text{H}_2\text{O}$ double replacement
19. $\underline{\quad \quad} \text{Na}_2\text{CO}_3 + \underline{\quad 2 \quad} \text{HCl} \rightarrow \underline{\quad 2 \quad} \text{NaCl} + \underline{\quad \quad} \text{H}_2\text{CO}_3$ double replacement
20. $\underline{\quad \quad} \text{NH}_4\text{NO}_2 \rightarrow \underline{\quad \quad} \text{N}_2 + \underline{\quad 2 \quad} \text{H}_2\text{O}$ decomposition
21. $\underline{\quad 2 \quad} \text{N}_2 + \underline{\quad 5 \quad} \text{O}_2 \rightarrow \underline{\quad 2 \quad} \text{N}_2\text{O}_5$ synthesis
22. $\underline{\quad \quad} \text{MgCO}_3 \rightarrow \underline{\quad \quad} \text{MgO} + \underline{\quad \quad} \text{CO}_2$ decomposition
23. $\underline{\quad 2 \quad} \text{KBr} + \underline{\quad \quad} \text{Cl}_2 \rightarrow \underline{\quad 2 \quad} \text{KCl} + \underline{\quad \quad} \text{Br}_2$ single replacement
24. $\underline{\quad \quad} \text{Zn} + \underline{\quad \quad} \text{CuSO}_4 \rightarrow \underline{\quad \quad} \text{Cu} + \underline{\quad \quad} \text{ZnSO}_4$ single replacement
25. $\underline{\quad 4 \quad} \text{P} + \underline{\quad 3 \quad} \text{O}_2 \rightarrow \underline{\quad \quad} \text{P}_4\text{O}_6$ synthesis