

## 4 • Chemical Equations and Stoichiometry

### BALANCING EQUATIONS

1.  $\_\_ \text{ZnS} + \_\_ \text{HCl} \rightarrow \_\_ \text{ZnCl}_2 + \_\_ \text{H}_2\text{S}$
2.  $\_\_ \text{HCl} + \_\_ \text{Cr} \rightarrow \_\_ \text{CrCl}_2 + \_\_ \text{H}_2$
3.  $\_\_ \text{Al} + \_\_ \text{Fe}_3\text{O}_4 \rightarrow \_\_ \text{Al}_2\text{O}_3 + \_\_ \text{Fe}$
4.  $\_\_ \text{H}_2 + \_\_ \text{Br}_2 \rightarrow \_\_ \text{HBr}$
5.  $\_\_ \text{Na}_2\text{S}_2\text{O}_3 + \_\_ \text{I}_2 \rightarrow \_\_ \text{NaI} + \_\_ \text{Na}_2\text{S}_4\text{O}_6$
  
6.  $\_\_ \text{LaCl}_3 + \_\_ \text{Na}_2\text{CO}_3 \rightarrow \_\_ \text{La}_2(\text{CO}_3)_3 + \_\_ \text{NaCl}$
7.  $\_\_ \text{NH}_4\text{Cl} + \_\_ \text{Ba}(\text{OH})_2 \rightarrow \_\_ \text{BaCl}_2 + \_\_ \text{NH}_3 + \_\_ \text{H}_2\text{O}$
8.  $\_\_ \text{Ca}(\text{OH})_2 + \_\_ \text{H}_3\text{PO}_4 \rightarrow \_\_ \text{Ca}_3(\text{PO}_4)_2 + \_\_ \text{H}_2\text{O}$
9.  $\_\_ \text{La}_2(\text{CO}_3)_3 + \_\_ \text{H}_2\text{SO}_4 \rightarrow \_\_ \text{La}_2(\text{SO}_4)_3 + \_\_ \text{H}_2\text{O} + \_\_ \text{CO}_2$
10.  $\_\_ \text{Na}_2\text{O} + \_\_ (\text{NH}_4)_2\text{SO}_4 \rightarrow \_\_ \text{Na}_2\text{SO}_4 + \_\_ \text{H}_2\text{O} + \_\_ \text{NH}_3$
  
11.  $\_\_ \text{C}_4\text{H}_{10} + \_\_ \text{O}_2 \rightarrow \_\_ \text{CO}_2 + \_\_ \text{H}_2\text{O}$
12.  $\_\_ \text{C}_7\text{H}_6\text{O}_2 + \_\_ \text{O}_2 \rightarrow \_\_ \text{CO}_2 + \_\_ \text{H}_2\text{O}$
13.  $\_\_ \text{P}_4\text{O}_{10} + \_\_ \text{H}_2\text{O} \rightarrow \_\_ \text{H}_3\text{PO}_4$
14.  $\_\_ \text{FeS}_2 + \_\_ \text{O}_2 \rightarrow \_\_ \text{Fe}_2\text{O}_3 + \_\_ \text{SO}_2$
15.  $\_\_ \text{NH}_3 + \_\_ \text{O}_2 \rightarrow \_\_ \text{NO} + \_\_ \text{H}_2\text{O}$
  
16.  $\_\_ \text{Fe} + \_\_ \text{HCl} \rightarrow \_\_ \text{H}_2 + \_\_ \text{FeCl}_2$
17.  $\_\_ \text{PbO}_2 + \_\_ \text{HCl} \rightarrow \_\_ \text{H}_2\text{O} + \_\_ \text{PbCl}_2 + \_\_ \text{Cl}_2$
18.  $\_\_ \text{Fe}_2\text{O}_3 + \_\_ \text{H}_2\text{SO}_4 \rightarrow \_\_ \text{Fe}_2(\text{SO}_4)_3 + \_\_ \text{H}_2\text{O}$
19.  $\_\_ \text{NO}_2 + \_\_ \text{H}_2\text{O} \rightarrow \_\_ \text{NO} + \_\_ \text{HNO}_3$
20.  $\_\_ \text{C}_2\text{H}_6\text{S} + \_\_ \text{O}_2 \rightarrow \_\_ \text{CO}_2 + \_\_ \text{H}_2\text{O} + \_\_ \text{SO}_2$

Complete combustion:

21.  $\text{C}_6\text{H}_{14}$
22.  $\text{C}_2\text{H}_5\text{OH}$
23.  $\text{C}_3\text{H}_7\text{OH}$
24.  $\text{C}_6\text{H}_6$
25.  $\text{C}_{17}\text{H}_{35}\text{COOH}$