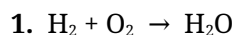


IntoChemistry | Balancing Chemical Equations

INSTRUCTOR ANSWER KEY

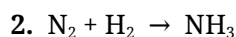
Directions: Balance each equation using the smallest positive whole-number coefficients. Do not change any subscripts. Write 1 explicitly if desired.

No atomic masses needed. Show atom counts and coefficient reasoning where helpful.



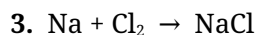
Answer: $2 \text{H}_2 + \text{O}_2 \rightarrow 2 \text{H}_2\text{O}$

Check: Start by balancing O, then H.



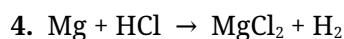
Answer: $\text{N}_2 + 3 \text{H}_2 \rightarrow 2 \text{NH}_3$

Check: Balance nitrogen first, then hydrogen.



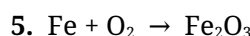
Answer: $2 \text{Na} + \text{Cl}_2 \rightarrow 2 \text{NaCl}$

Check: Chlorine is diatomic in the reactants.



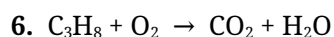
Answer: $\text{Mg} + 2 \text{HCl} \rightarrow \text{MgCl}_2 + \text{H}_2$

Check: Match the two chlorine atoms in MgCl_2 .



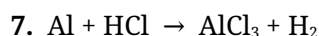
Answer: $4 \text{Fe} + 3 \text{O}_2 \rightarrow 2 \text{Fe}_2\text{O}_3$

Check: A common multiple of 2 and 3 oxygen atoms is 6.



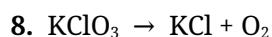
Answer: $\text{C}_3\text{H}_8 + 5 \text{O}_2 \rightarrow 3 \text{CO}_2 + 4 \text{H}_2\text{O}$

Check: Balance C, then H, then O.



Answer: $2 \text{Al} + 6 \text{HCl} \rightarrow 2 \text{AlCl}_3 + 3 \text{H}_2$

Check: Balance Cl in multiples of 3 and H in multiples of 2.



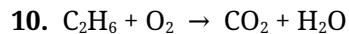
Answer: $2 \text{KClO}_3 \rightarrow 2 \text{KCl} + 3 \text{O}_2$

Check: Find an even oxygen total on the left.





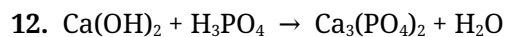
Check: Keep nitrate together as a group; it remains unchanged.



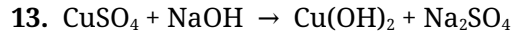
Check: Balance C and H first; eliminate fractional O₂ at the end.



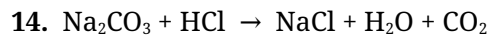
Check: Balance Fe first, then use CO to account for O.



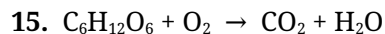
Check: Treat phosphate as one group; balance calcium before water.



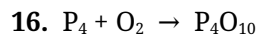
Check: Sulfate is unchanged; balance sodium and hydroxide.



Check: Balance Na and Cl, then H; confirm C and O.



Check: Balance C, then H; count oxygen already in glucose.



Check: Match the ten oxygen atoms in the product.