

Predicting Products & Balancing Equations

(Honors Chemistry)

Complete and balance the following equations:

SINGLE REPLACEMENT REACTIONS

- $2 \text{Al} + 3 \text{Pb}(\text{NO}_3)_2 \rightarrow 3 \text{Pb} + 2 \text{Al}(\text{NO}_3)_3$
- $1 \text{Cl}_2 + 2 \text{NaI} \rightarrow 1 \text{I}_2 + 2 \text{NaCl}$
- $1 \text{Fe (II)} + 2 \text{AgC}_2\text{H}_3\text{O}_2 \rightarrow 2 \text{Ag} + 1 \text{Fe}(\text{C}_2\text{H}_3\text{O}_2)_2$
- $2 \text{Al} + 3 \text{CuCl}_2 \rightarrow 3 \text{Cu} + 2 \text{AlCl}_3$
- $1 \text{Br}_2 + 1 \text{CaI}_2 \rightarrow 1 \text{I}_2 + 1 \text{CaBr}_2$
- $2 \text{Al} + 6 \text{HCl} \rightarrow 3 \text{H}_2 + 2 \text{AlCl}_3$
- $1 \text{Mg} + 2 \text{HCl} \rightarrow 1 \text{H}_2 + 1 \text{MgCl}_2$
- $1 \text{Zn} + 1 \text{H}_2\text{SO}_4 \rightarrow 1 \text{H}_2 + 1 \text{ZnSO}_4$
- $2 \text{Fe (III)} + 3 \text{CuSO}_4 \rightarrow 3 \text{Cu} + 1 \text{Fe}_2(\text{SO}_4)_3$
- $1 \text{Cl}_2 + 1 \text{MgI}_2 \rightarrow 1 \text{I}_2 + 1 \text{MgCl}_2$

DOUBLE REPLACEMENT REACTIONS

- $3 \text{Ca}(\text{OH})_2 + 2 \text{H}_3\text{PO}_4 \rightarrow 1 \text{Ca}_3(\text{PO}_4)_2 + 6 \text{H}_2\text{O}$ (Hint: HOH)
- $1 \text{K}_2\text{CO}_3 + 1 \text{BaCl}_2 \rightarrow 1 \text{BaCO}_3 + 2 \text{KCl}$
- $1 \text{Cd}_3(\text{PO}_4)_2 + 3 (\text{NH}_4)_2\text{S} \rightarrow 3 \text{CdS} + 2 (\text{NH}_4)_3\text{PO}_4$
- $1 \text{Co}(\text{OH})_3 + 3 \text{HNO}_3 \rightarrow 1 \text{Co}(\text{NO}_3)_3 + 3 \text{H}_2\text{O}$ (Hint: HOH)
- $1 \text{AgNO}_3 + 1 \text{KCl} \rightarrow 1 \text{KNO}_3 + 1 \text{AgCl}$
- $1 \text{Na}_2\text{CO}_3 + 1 \text{H}_2\text{SO}_4 \rightarrow 1 \text{H}_2\text{CO}_3 + 1 \text{Na}_2\text{SO}_4$
- $1 \text{Al}(\text{OH})_3 + 3 \text{HC}_2\text{H}_3\text{O}_2 \rightarrow 1 \text{Al}(\text{C}_2\text{H}_3\text{O}_2)_3 + 3 \text{H}_2\text{O}$ (Hint: HOH)
- $1 \text{Al}_2(\text{SO}_4)_3 + 1 \text{Ca}_3(\text{PO}_4)_2 \rightarrow 2 \text{AlPO}_4 + 3 \text{CaSO}_4$
- $1 \text{Cr}_2(\text{SO}_3)_3 + 3 \text{H}_2\text{SO}_4 \rightarrow 1 \text{Cr}_2(\text{SO}_4)_3 + 3 \text{H}_2\text{SO}_3$
- $2 \text{AgC}_2\text{H}_3\text{O}_2 + 1 \text{K}_2\text{CrO}_4 \rightarrow 1 \text{Ag}_2\text{CrO}_4 + 2 \text{KC}_2\text{H}_3\text{O}_2$

DECOMPOSITION REACTIONS

1. 2 LiCl → 2 Li + 1 Cl₂
2. 2 Ag₂O → 4 Ag + 1 O₂
3. 2 Fe₂O₃ → 4 Fe + 3 O₂
4. 2 CaO → 2 Ca + 1 O₂
5. 2 Al₂O₃ → 4 Al + 3 O₂
6. 2 KI → 2 K + 1 I₂
7. 2 NaO → 2 Na + 1 O₂
8. 1 BaCl₂ → 1 Ba + 1 Cl₂

COMBINATION REACTIONS

1. 2 Fe(III) + 3 F₂ → 2 FeF₃
2. 4 Na + 1 O₂ → 2 Na₂O
3. 1 P₂O₃ + 3 H₂O → 2 H₃PO₃
4. 1 K₂O + 1 H₂O → 2 KOH
5. 1 BaO + 1 H₂O → 1 Ba(OH)₂
6. 1 CO₂ + 1 H₂O → 1 H₂CO₃
7. 1 Al₂O₃ + 3 H₂O → 2 Al(OH)₃
8. 1 N₂O₅ + 1 H₂O → 2 HNO₃
9. 2 Ca + 1 O₂ → 2 CaO
10. 1 Zn + 1 Cl₂ → 1 ZnCl₂

COMBUSTION REACTIONS

1. 2 C₆H₆ + 15 O₂ → 12 CO₂ + 6 H₂O
2. 1 C₁₂H₂₂O₁₁ + 12 O₂ → 12 CO₂ + 11 H₂O
3. 1 C₂₅H₅₂ + 38 O₂ → 25 CO₂ + 26 H₂O
4. 1 C₂H₅OC₂H₅ + 6 O₂ → 4 CO₂ + 5 H₂O
5. 1 C₄H₉OH + 6 O₂ → 4 CO₂ + 5 H₂O