What Are the Types of Chemical Reactions?

Worksheet

The four main reaction types are synthesis (A + B AB), decomposition (AB A + B), single replacement (A + BC AC + B), and double replacement (AB + CD AD + CB). Each follows different rules for atom rearrangement.

Questions

1. Which is a synthesis reaction?

A) CaCO CaO + CO
B) Mg + O MgO
C) Fe + CuSO FeSO + Cu
D) HCl + NaOH NaCl + HO

2. 2HO 2H + O is a(n)

A) Synthesis
B) Decomposition
C) Single replacement
D) Double replacement

3. Which is a double replacement?

A) Zn + 2HCl ZnCl + H
B) AgNO + NaCl AgCl + NaNO
C) 2F 2F
D) C + O CO

4. In single replacement, which element must be more reactive?

A) The one being replaced
B) The incoming element
C) Both equally
D) Neither; it's random

5. 2Na + Cl 2NaCl. Name the reaction type.

6. 2KClO 2KCl + 3O. Name the reaction type.

7. Mg + CuSO MgSO + Cu. Name the reaction type and explain why it occurs.

8. Define: What is synthesis?

9. Define: What is decomposition?

10. Define: What is single replacement?

Answer Key

1. B) Mg + O MgO - Mg + O MgO combines two elements into one compound.
2. B) Decomposition - One compound (HO) breaks apart into two elements.
3. B) AgNO + NaCl AgCl + NaNO - Two ionic compounds swap ions: Ag and Na exchange partners.
4. B) The incoming element - The incoming element must be more reactive to displace the other.
5. Two separate elements (Na and Cl) combine to form one compound (NaCl). This is synthesis (combination).
6. One compound (KClO) breaks down into a simpler compound (KCl) and an element (O). This is decomposition.
7. Mg is more reactive than Cu (by reactivity series). Mg displaces Cu from the sulfate. This is single replacement.
8. Two or more substances combine to form one compound: A + B AB.
9. One compound breaks apart into two or more simpler substances: AB A + B.
10. One element replaces another element in a compound: A + BC AC + B.