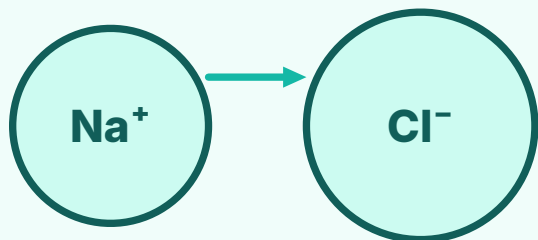


Bonding & Reactions

10th Grade

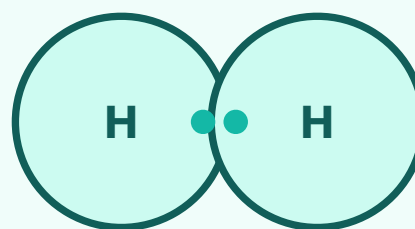
Ionic vs covalent bonding, valence electrons and the five reaction types.

IONIC — electrons transferred



Metal + non-metal. One gives, one takes.
High melting point; conducts when dissolved.

COVALENT — electrons shared



Non-metal + non-metal. Both pull, neither wins.
Lower melting point; usually does not conduct.

VALENCE ELECTRONS BY GROUP

Group 1

1 valence e^-
loses 1 $\rightarrow$ +1

Group 2

2 valence e^-
loses 2 $\rightarrow$ +2

Group 13

3 valence e^-
loses 3 $\rightarrow$ +3

Group 14

4 valence e^-
shares 4

Group 15

5 valence e^-
gains 3 $\rightarrow$ -3

Group 16

6 valence e^-
gains 2 $\rightarrow$ -2

Group 17

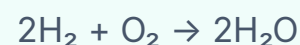
7 valence e^-
gains 1 $\rightarrow$ -1

Group 18

8 valence e^-
full — unreactive

THE FIVE REACTION TYPES

Synthesis



Decomposition



Single replacement



Double replacement



Combustion



Mass is conserved — the same atoms must appear on both sides.