



# Cambridge IGCSE Chemistry

## Topic 3: atoms, elements and compounds

### **Metallic bonding (Extended candidates only)**

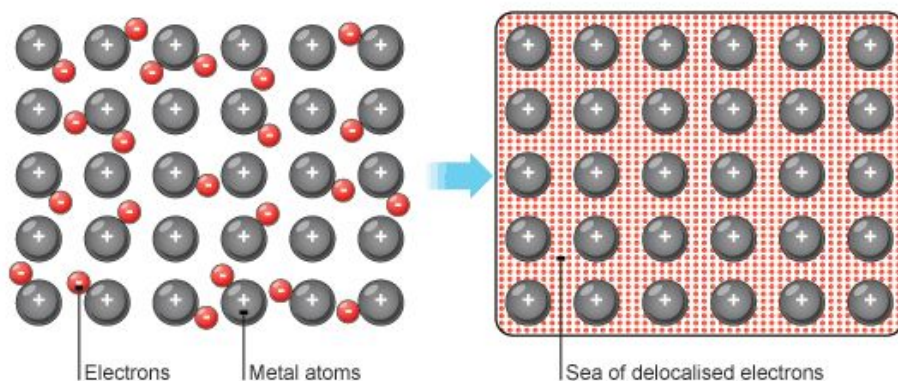
Notes





*(Extended only) Describe metallic bonding as a lattice of positive ions in a 'sea of electrons' and use this to describe the electrical conductivity and malleability of metals*

- metallic bonding: a regular lattice of + metal ions surrounded by a sea of delocalised electrons
- Metals consist of giant structures of atoms arranged in a regular pattern.
- The electrons in the outer shell of metal atoms are delocalised and so are free to move through the whole structure.
- The sharing of delocalised electrons gives rise to strong metallic bonds.



- electrical conductivity: metals can conduct electricity because the sea of delocalised electrons is able to move
- malleability: the regular arrangement of equally sized metal ions means that the layers of ions are able to slide over each other easily, without the metal shattering, making metals malleable

