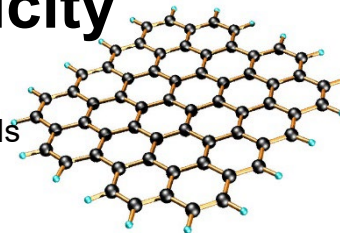


# The Periodic Table: Periodicity



The key areas of study in this topic are:

- The structure of the Periodic Table in terms of groups and periods
- Periodicity of physical properties of elements
- Metallic Bonding
- Giant Lattices (metallic and covalent)

By the end of this topic I should be able to:

	Start	End
Describe the periodic table as the arrangement of elements: <ul style="list-style-type: none"> <li>• by increasing atomic (proton) number</li> <li>• in periods showing repeating trends in physical and chemical properties (periodicity)</li> <li>• in groups having similar chemical properties</li> </ul>		
Explain the periodic trend in electron configurations across Periods 2 and 3		
Classify elements into s-, p- and d-blocks		
Define the term first ionisation energy		
Understand the concept of successive ionisation energies		
Write equations to show the change involved in different ionisation energies		
Explain the trend in first ionisation energies in terms of attraction, nuclear charge and atomic radius <ul style="list-style-type: none"> <li>• across Periods 2 and 3</li> <li>• down a group,</li> </ul>		
Use successive ionisation energies to predict the number of electrons in each shell of an atom and the group of an element		
Explain: <ul style="list-style-type: none"> <li>• metallic bonding as strong electrostatic attraction between cations (positive ions) and delocalised electrons</li> <li>• a giant metallic lattice structure</li> </ul>		
Explain the solid giant covalent lattices of carbon (diamond, graphite and graphene) and silicon as networks of atoms bonded by strong covalent bonds		
Explain physical properties of giant metallic and giant covalent lattices, including melting and boiling points, solubility and electrical conductivity in terms of structure and bonding		
Explain the variation in melting points across Periods 2 and 3 in terms of structure and bonding		

**In all topic areas you should be able to demonstrate and apply your knowledge and understanding.**