

- Describe the periodic trends of **either** atomic radius **or** of ionisation energy. Explain the trend in the property selected.

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Atomic radius:

Atomic radius decreases across a period and increases down a group. The numbers of protons and electrons increase as you move across a row. Electrons in s or p orbitals are not shielded from the increasing nuclear charge and hence the effective nuclear charge (Z_{eff}) is increasing. This results in smaller orbitals and decreasing atomic radius. At the end of the row, the next electron goes into an s orbital of greater n . This orbital is shielded by electrons in the lower energy orbitals and there is a consequent big drop in Z_{eff} . The atomic radius thus increases going down a group.

Ionisation energy:

Ionisation energies increase across a row as the atoms become smaller. The smaller the atom, the more strongly the outer electrons are attracted to the nucleus and hence the higher the ionisation energy. Similarly, ionisation energies decrease down a group as the atoms become larger.

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