

Electron Configuration

10th Grade

Where the electrons actually sit, and why the periodic table is shaped as it is.

Electrons fill the lowest available energy levels first. The order is not simply numerical.

1 FILL LOWEST ENERGY FIRST

1s, 2s, 2p, 3s, 3p, 4s, 3d, 4p...

2 MIND THE CAPACITIES

s holds 2, p holds 6, d holds 10, f holds 14.

3 USE THE DIAGONAL RULE

4s is lower in energy than 3d, so it fills first.

4 COUNT THE VALENCE ELECTRONS

The outermost shell — this is what determines reactivity.

WORKED

Oxygen (8): $1s^2 2s^2 2p^4$

Calcium (20): $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$

The table's blocks are the sublevels: s-block on the left, p-block on the right, d-block in the middle.