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the Periodic Table

- scientists :
  - robert boyle
    - defined the 'element'
      - substance made up of only one type of atom
  - humphry davy
    - discovered many elements e.g. potassium (electrolysis)
  - dobereiner
    - he was the first to attempt to trace a relationship between the properties of elements and their atomic weights
    - arranged elements with similar properties into groups of 3 (triads)
  - newland
    - arranged the known elements in order of atomic weight
    - missing noble gases
    - didn't leave gaps in his table
    - octaves - properties of elements seemed top repeat with every eight elements
  - Mendeleev
    - arranged elements in order of increasing atomic weight
      - left gaps in his table for undiscovered elements
      - predicted the properties of undiscovered elements
      - reversed the order of some elements :tellurium +iodine
  - Moseley
    - discovered the atomic number of atoms
    - arranged the elements in order of increasing atomic number
    - didnt have to reverse the order of some elements
- definitions
  - orbital
    - a region in space where there is a high probability of finding an electron
  - electron configuration
    - shows the arrangement of electrons in an atom of that element
  - mass number
    - sum of the number of protons and neutrons in the nucleus of an atom
  - isotopes
    - atoms of the same element with different mass numbers
  - relative atomic mass
    - the average the average of the mass numbers of the atoms of the element relative to 1/12 the mass of the carbon-12 atom
- mass spectrometer
  - principle: positive ions are seperated by mass when moving in a magnetic field
  - process: 1.Vaporisation 2.ionisation 3.acceleration 4. seperation in a magnetic field 5.detection
  - uses:gas chromatography, drug testing,identify the presence of isotopes, measure ar and mr
- principles
  - aufbau principle; when building up the electron configuration in its ground state, the electrons occupy the lowest available energy level
  - Hunds rule of maximum muiltiplicity: when two or more orbitals of equal energy are available, the electrons occupy them singly before filling them in pairs.
  - The Pauli Exclusion Principle; No more than 2 electrons may occupy an orbital and they must have opposite spins.