Atoms

1 What are atoms?

- small particles making up everything
- very tiny & lightweight
- different atoms have different sizes / weights

2 Chemical symbols

- represent name of atoms
- universally accepted
- 1-2 letters

3 Structure of atoms

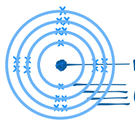
PARTICLES

(atoms) same no. → overall neutral

	name	symbol	relative mass	charge
-	Proton	p	1	+1
-	Neutron	n	1	0
-	Electron	e^-	0 (negligible)	-1

STRUCTURE

A potassium atom (19 electrons)

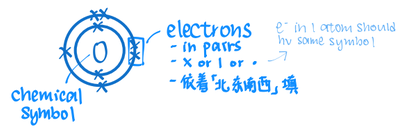


Nucleus

- contains protons & neutrons
  - ↳ positively charged
- tiny & extremely dense (diameter = $\frac{1}{50000}$ of atom diameter)

Electron shells

- certain fixed orbits surrounding nucleus which electrons move in
- max number of e^- a shell holds = $2n^2$ → 2⇒8⇒18⇒32
- ☆ 壳不一定要被填满
- Electronic arrangement
  - > Representing by numbers
    - → eg. $_{13}Al$ → 2,8,3 (1st shell, 2nd shell, 3rd shell)
  - > Representing by electron diagrams
    - → eg. oxygen atom



- → eg2. oxygen ion

  - > Octet rule
    - → All atoms tend to attain stable electronic arrangement (duplet/octet) by gaining / losing e^- → ions
    - → eg. Na loses 1 outermost shell e^- → octet arrangement → Na^+ ion