

# particles in the atom

## Summary

- Atoms have a small dense nucleus consisting of protons and neutrons, and electrons in the empty space around the nucleus
- Protons and neutrons have a relative mass number of 1, and electrons have a relative mass number of  $1/1837$  or negligible
- Protons have a positive relative charge of +1, electrons have -1, and neutrons have 0 (no charge)
- Atomic (proton) number (Z) is the number of protons in the atom
- Mass (nucleon) number (A) is the number of nucleons(proton + neutrons) in the atom
- Number of neutrons = mass number - proton number
- Atomic radii increases down a group because the number of shells increases
- Atomic radii decreases down a period because the positive nuclear charge increases

$$\text{Degree of deflection} \propto \frac{\text{Charge}}{\text{Mass}}$$

The greater the mass of the particle, the smaller the deflection

	Relative charge	Relative mass	Charge
Neutron	0	1	0
Proton	+1	1	$1.602 \times 10^{-19}$
Electron	-1	$\frac{1}{1837}$	$-1.602 \times 10^{-19}$