

# Chemistry Kerboodle: C1 Atomic Structure

Name: \_\_\_\_\_

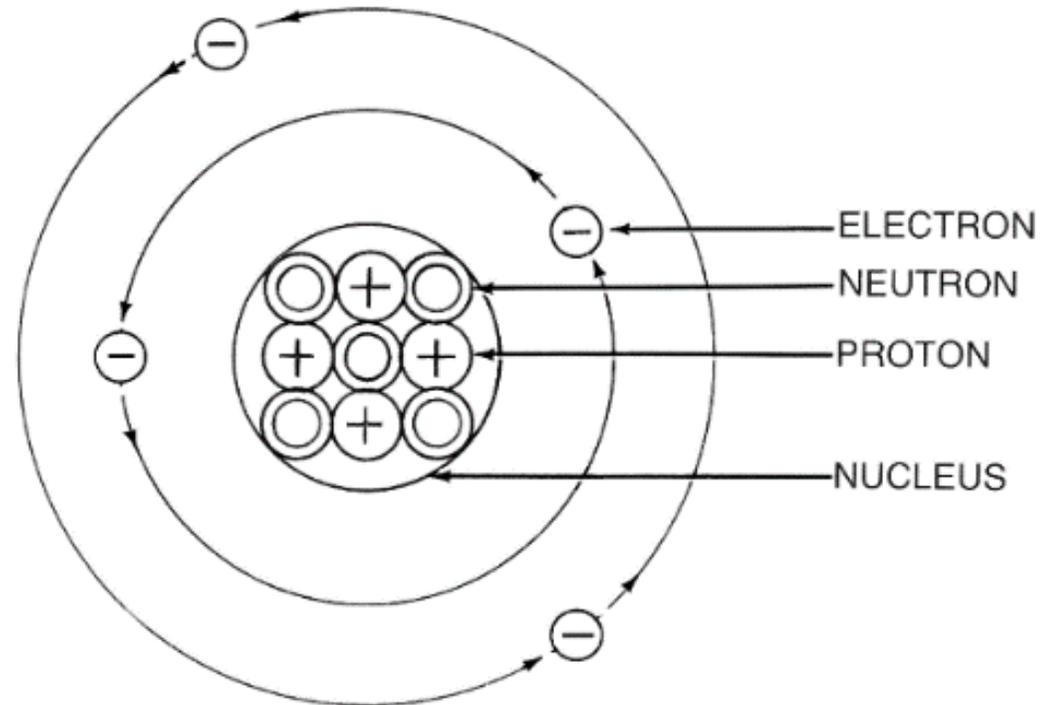
1. Keywords	
1. Atom	The smallest possible piece of an element. Has a radius of 0.1nm (or $1 \times 10^{-10} \text{m}$ )
2. Element	A substance in which all the atoms have the same atomic number
3. Isotope	Atoms with the same number of protons but different numbers of neutrons
4. Molecule	Two or more atoms bonded together
5. Compound	Two or more <u>different</u> atoms bonded together
6. Mixture	At least two different elements or compounds together. Can be separated easily
7. Nucleus	The centre of an atom. Contains protons and neutrons
8. Proton	A positively charged particle found in the nucleus
9. Neutron	A neutral particle found in the nucleus. Has no charge
10. Electron	A negatively charged particle found in energy levels (shells) around the nucleus

3. History of the atom			
Discovery	By	Model	Diagram
Solid particle called atom	John Dalton	Particle: solid spheres	1
The electron	JJ Thompson	Plum pudding: positive 'cake' with negative 'plums'	2
Nucleus	Rutherford	Nuclear: Positive nucleus surrounded by electrons	3
Neutron	James Chadwick	Nuclear: Now with protons and neutrons in nucleus	3
Energy levels (shells)	Niels Bohr	Planetary: Electrons now 'orbit' in different shells	4

2. Common separation techniques	
1. <b>Chromatography</b>	Used to separate a mixture of dyes in ink.
2. <b>Filtration</b>	Used to separate insoluble solids from liquids (e.g. sand from water).
3. <b>Evaporation</b>	Used to separate a soluble salt from solution. The solution is heated strongly in an evaporating basin until dry crystals are left.
4. <b>Crystallisation</b>	Used to separate a soluble salt from solution. The solution is heated gently in an evaporating basin until crystals form; the remaining liquid is filtered out.
5. <b>Simple distillation</b>	Is used to separate a liquid from a solution – e.g. water from ink. A condenser is used to cool hot gas until it forms a liquid.
6. <b>Fractional distillation</b>	Used to separate a mixture of liquids with different boiling points.

#### 4. Properties of sub-atomic particles

Particle	Relative mass	Relative charge	Location
Proton	1	+1	Nucleus
Neutron	1	0	Nucleus
Electron	0	-1	Shells



#### 5. Electron arrangement rules

1.	Always fill from the inside to the outside
2.	The first shell can only hold 2 electrons
3.	The second and third can hold 8