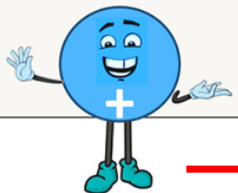


Number of protons:
For an atom = atomic number
Number of electrons:
For an atom = atomic number
Number of neutrons:
For an atom = atomic mass - atomic number

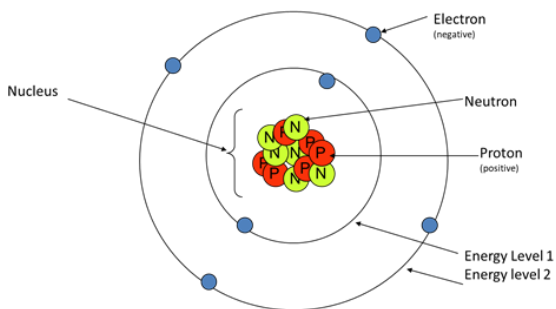


atom or ion	number of protons	Atomic number	number of electrons	number of neutrons	Mass number
carbon (C)	6	6	6	6	12
magnesium (Mg)	12	12	12	12	24
fluorine (F)	9	9	9	10	19

Number of protons, electrons and Neutrons can be calculated

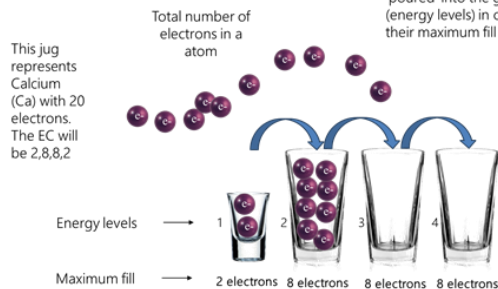
Subatomic particle	symbol	Mass compared to a proton	charge	location
 positive Proton	p	1	+1	In the nucleus
 neutral Neutron	n	1	0	In the nucleus
 negative Electron	e	1/1840	-1	Moving outside the nucleus

Different subatomic particles have different charges

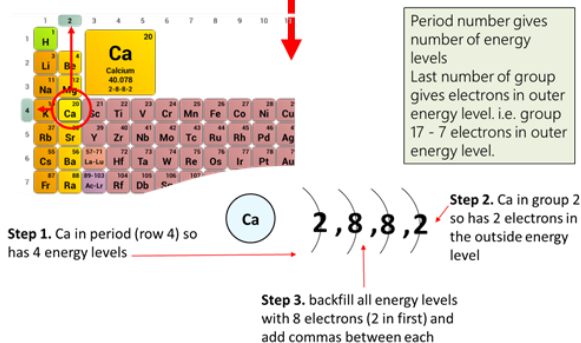


Atoms contain protons, electrons and neutrons

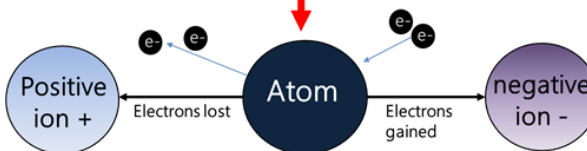
All of the electrons (determined by the Atomic Number) must be 'poured' into the glasses (energy levels) in order to their maximum fill



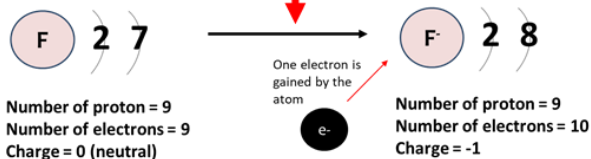
Electron configuration is calculated from total electrons



The Periodic Table can be used to write electron configurations



An ion loses or gains electrons



A negative ion gains electrons to fill an energy level

Reactants



Products



2 hydrogen molecules + 1 oxygen molecule yields 2 water molecules

The word equation therefore will be:

Reactants
on the left

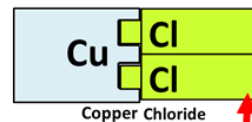
Products on
the right

Propane + oxygen \rightarrow water + carbon dioxide

Add chemicals
with a +

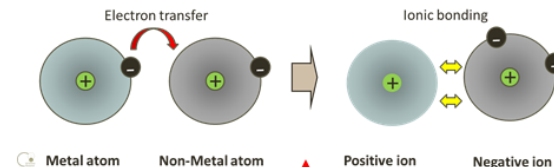
Show reactants turning
into products with a \rightarrow

Word and formula equations can be written to show reactions

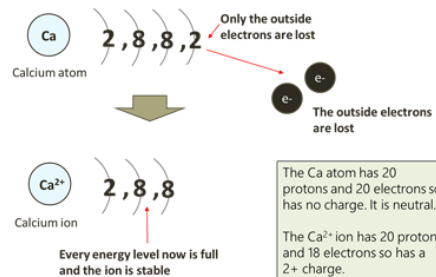


Copper chloride has a formula of CuCl_2

Ions join together to make neutral compounds



Ions swap electrons and bond together to form an ionic compound



Every energy level now is full and the ion is stable

The Ca atom has 20 protons and 20 electrons so has no charge. It is neutral.
The Ca^{2+} ion has 20 protons and 18 electrons so has a 2+ charge.

A positive ion loses electrons

Ideas for last minute study sheet

1. **10 questions.** Working in pairs. Each student uses the sheet to write 10 questions that could be answered with information on the sheet. The other student could have a different topic sheet. Focus on the students creating specific questions – rather than “what is an atom”, ask “draw a labelled diagram of an atom”. Swap over the question sheets for the other partner to answer (without the sheet). Once finished, use the sheet to check answers. For any answers that are incorrect, use the sheet to correct them.
2. **Concept maps.** Students use the information on the sheet to create a large concept map.
3. **Scaffolded Practice Tests.** Create a short test, either paper or online (i.e. Kahoot, FORMS, Education Perfect), where the students are able to use the sheet to help. Repeat the test (or an alternative) the next day, without the information sheet.
4. **Expert Groups / Mastermind.** Use the sheets to study for a short period of time then hold a class mastermind competition.