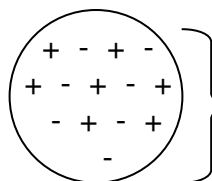


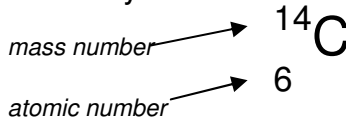
The Atom

1. **Protons** are positively charged (+).
2. **Neutrons** have no charge.
3. **Electrons** are small and are negatively charged (-).
4. Protons & neutrons are in an atom's nucleus (**nucleons**).
5. Electrons are found in "clouds" (**orbitals**) around an atom's nucleus.
6. The **mass number** is equal to an atom's number of protons and neutrons added together.
7. The **atomic number** is equal to the number of protons in the nucleus of an atom.
8. The **number of neutrons** = mass number – atomic number.
9. **Isotopes** are atoms with equal numbers of protons, but differ in their neutron numbers.
10. **Cations** are *positive* (+) ions and form when a neutral atom *loses* electrons. They are *smaller* than their parent atom.
11. **Anions** are negative ions and form when a neutral atom *gains* electrons. They are *larger* than their parent atom.
12. **Ernest Rutherford's gold foil experiment** showed that an atom is mostly empty space with a small, dense, positively-charged nucleus.
13. **J.J. Thompson** discovered the electron and developed the "plum-pudding" model of the atom.



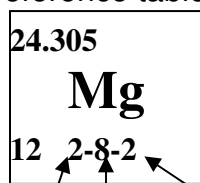
Positive & negative particles spread throughout entire atom.

14. **Dalton's** model of the atom was a solid sphere of matter that was uniform throughout.
15. The **Bohr Model** of the atom placed electrons in "planet-like" orbits around the nucleus of an atom.
16. The current, **wave-mechanical model** of the atom has electrons in "clouds" (orbitals) around the nucleus.
17. Electrons emit energy as light when they jump from higher energy levels back down to lower (**ground state**) energy levels. **Bright line spectra** are produced.
18. Isotopes are written in a number of ways: C-14 is also Carbon-14, and is also



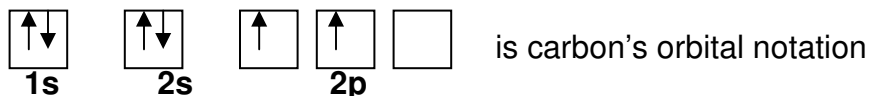
19. The distribution of electrons in an atom is its **electron configuration**.

20. Electron configurations are written in the bottom center of an element's box on the periodic table in your reference tables.



of electrons in 3rd principal energy level
of electrons in 2nd principal energy level
of electrons in 1st principal energy level

21. **Orbital notation** is a way of drawing the electron configuration of an atom.

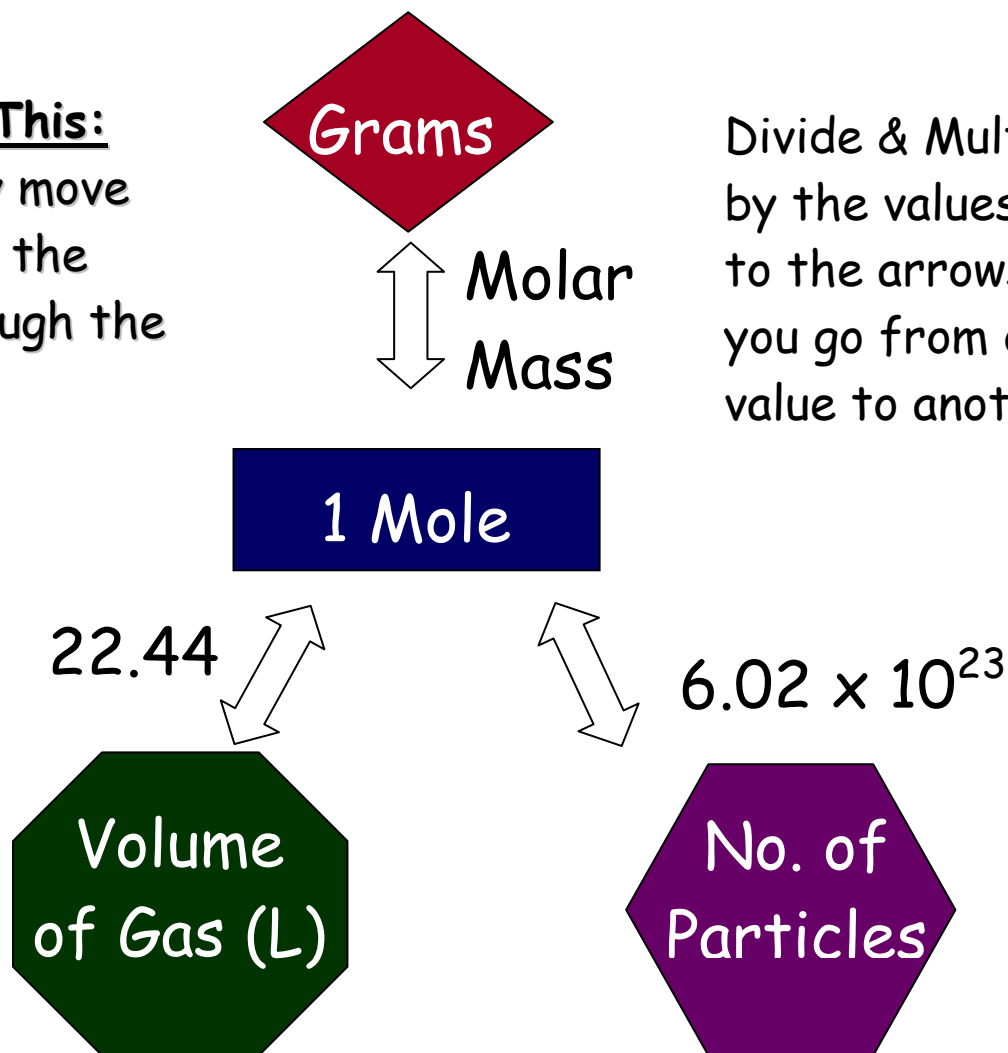


22. Use the **mole triangle diagram** below to help you solve conversions between moles, grams, numbers of molecules/atoms, and liters of gases at STP...

The Mole Triangle

Remember This:

You can only move by following the arrows through the center.



Divide & Multiply by the values next to the arrows as you go from one value to another.