

$$1.67 \times 10^{-27} \text{ kg}$$

$$\leftarrow 1.67 \times 10^{-24} \text{ g}$$

.000000000000000000000000167g
 = mass of 1 neutron
 = mass of 1 proton

The ratio of the mass of a proton compared to the mass of a neutron

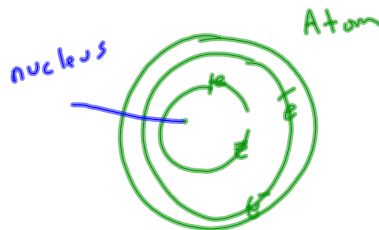
$$\frac{\text{mass } n}{\text{mass } p^+} = \boxed{1}$$

→ mass of $1 e^-$:

$$9.11 \times 10^{-31} \text{ kg}$$

$$= 9.11 \times 10^{-28} \text{ g}$$

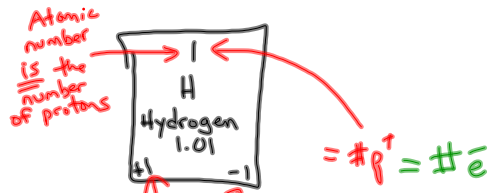
$$\frac{\text{mass } 1 p^+}{\text{mass } 1 e^-} = \frac{1.67 \times 10^{-24} \text{ g}}{9.11 \times 10^{-28} \text{ g}} = \underline{1833}$$



The volume of a nucleus is very small compared to the volume of an atom. I

The mass of a nucleus is very large compared to its volume.

Nucleus } ↓ volume } very
 } ↑ mass } dense



→ For this module we'll only be dealing with neutral atoms. Won't be using

For neutral atom:

$\#p^+ = \#e^-$

→ The number of neutrons in an atom of a certain element is not a constant.

→ The number of neutrons is not necessarily equal to the number of protons.

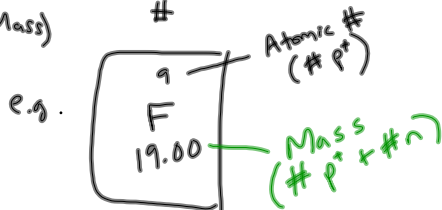
e.g. Carbon (3 types of carbon atoms)

C-12	C-13	C-14
6p ⁺	6p ⁺	6p ⁺
6e ⁻	6e ⁻	6e ⁻
6n	7n	8n

$\# \text{neutrons} = \text{Mass} - \text{Atomic \#} (\#p^+)$

Boys + Girls - # boys = # Girls

Protons + Neutrons (Mass) - # protons Atomic # = # neutrons



Bottom - top = # neutrons

$$\text{a.m.u.} = u$$

atomic mass unit = unit

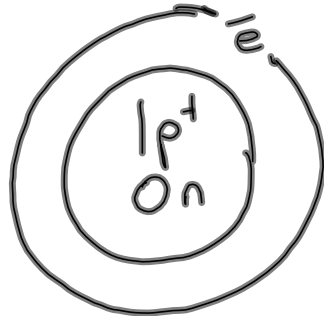
$$1 \text{ proton} = 1 u$$

$$1 \text{ neutron} = 1 u$$

$$1 \text{ electron} = \text{negligible}$$

Electron Configuration Diagrams

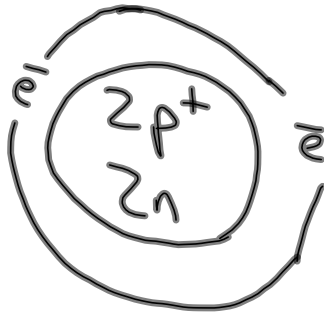
H :



Shorthand
notation

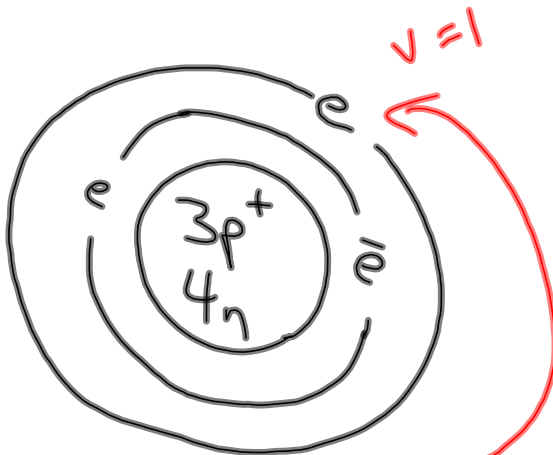
$1e^-$

He :



$2e^-$

Li



$2e^- 1e^-$

Valence electrons : the electrons
in the outermost orbit.
($v=1$)

H-1
Regular
light
hydrogen

H-2
Deuterium

H-3
Tritium

1p⁺

1p⁺

1p⁺

0n

1n

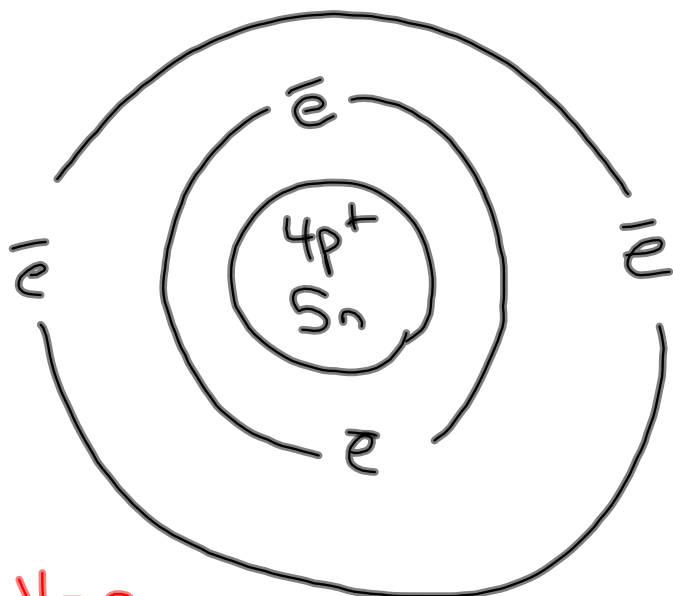
2n

1e⁻

1e⁻

1e⁻

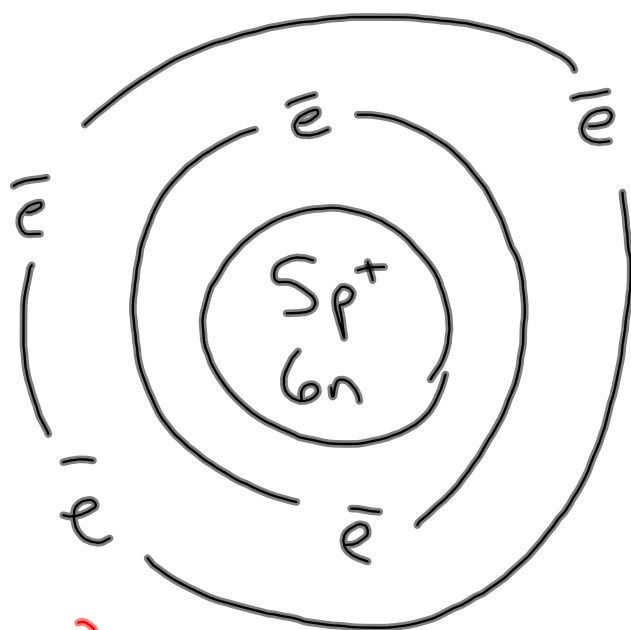
Be



2e 2e

V=2

B



2e 3e

V=3

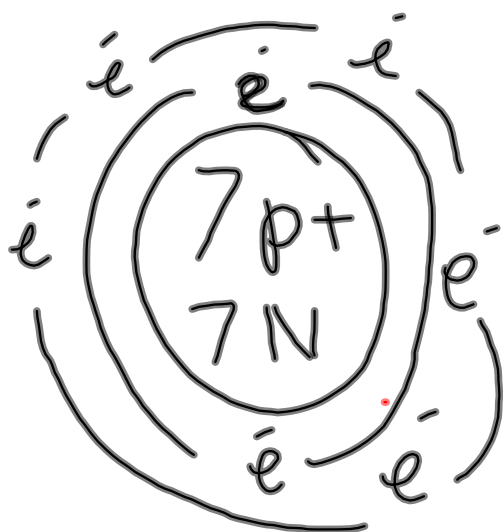


$$2\bar{e}4\bar{e}$$

$$v=4$$

TaylinTaylin
TaylinTaylin

N :



$V = 5$
 $2e^- 5e^-$

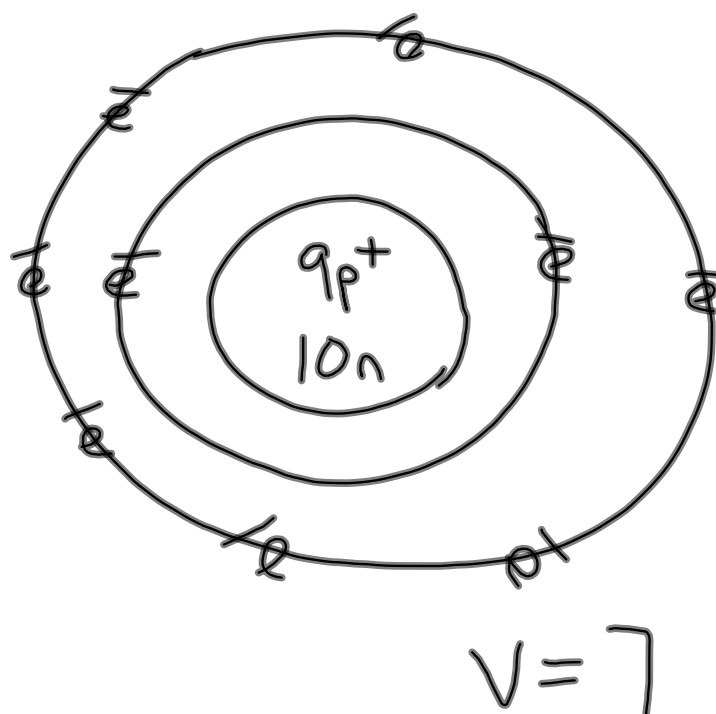
Bianca



2e- 6c-
v:6

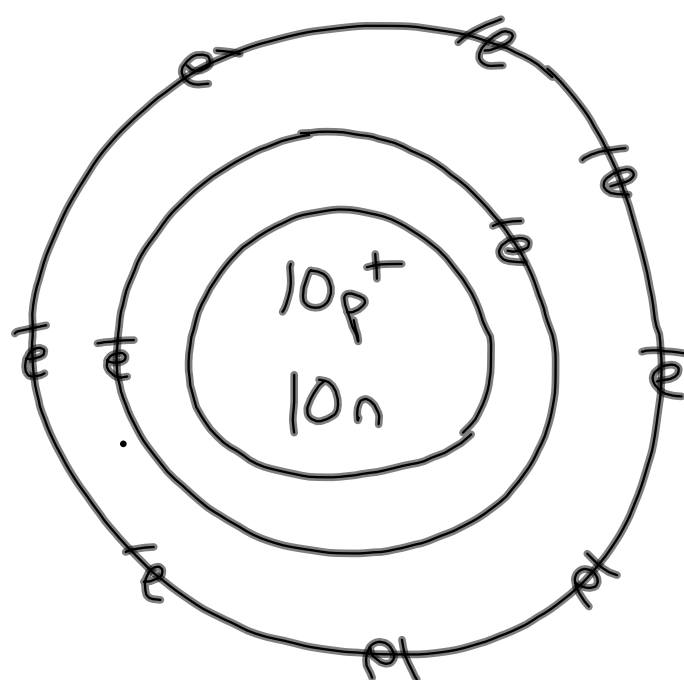
Cristina

Fluorine



2e 7e

Ne



$2e^- 8e^-$

$V = 8$

