

H hydrogen

He helium

alkali
metals

↓ Li Lithium ↓

upper case → Na Sodium

lower case

~~NA~~

K potassium

Rb rubidium

Cs cesium

Fr francium

Be beryllium

Mg magnesium

Ca calcium

Sr strontium

Ba barium

Ra radium

alkaline
earth
metals

Ti titanium

Cr chromium

Fe iron

Co cobalt

Ni nickel

Cu copper

Zn zinc

Y yettrium

Ag silver

Sn Tin

La lanthanum

W tungsten

Os osmium

Pt platinum

Au gold

Hg mercury

Pb lead

Bi bismuth

Po polonium

Ac actinium

Th thorium

U uranium

Am americium

B boron Boron
Al aluminium Group

C	carbon	carbon group
Si	Silicon	
Sn	Tin	
Pb	lead	

N nitrogen

nitrogen
group

P phosphorous

As arsenic

Bi

O oxygen group

S sulfur

Se Selenium

Po polonium

F fluorine halogens
Cl chlorine
Br bromine
I iodine

Nobel gasses

Ne neon

Ar argon

Kr Krypton

Xe xenon

Rn radon

~~inert~~
gasses

3B



2B

transition
metals

can have more than
than 1 charge

* rare earth metals

+ lanthanide series

+ actinide series

Valance e^- s are
the e^- s in the outer
shell.

+1

IA

Li +1 $1e^-$

Na +1

K +1 gain $7e^-$

Rb +1 loss $1e^-$

Cs +1

Fr +1

8 e^- in the outer most
Shell makes the
element "happy happy"

+2

2A

Be

Mg

Ca

Sr

Ba

Ra

gain $6e^-$

loss $2e^-$

⁺³
3A

B

Al

Ga

In

Tl

3 valance e's

loss $3e^-$

gain $5e^-$

4A ± 4
C

Si

Ge 4 valance e^- s

Sn

loss $4e^-$

Pb

gain $4e^-$

⁻³
5A

N

P

As

Sb

Bi

5 valance e's

loss 5e⁻

gain 3e⁻

⁻²
6A

O

S

S_e

Te

PO

6 valance e⁻s

loss 6 e⁻
gain 2 e⁻s

-1

7A

F

Cl

Br

I

7 valance e^- s

loss $7e^-$

or gain $1e^-$

1 H

2 Li

3 Na

4 K

5 Rb

6 Cs

7 Fr

1-7

going down
are the principle
energy levels

energy levels

period

g
r
o
u
p

← react in the same way.

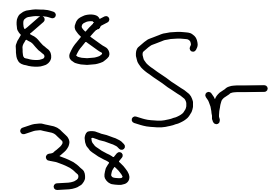
↙ # p - identifies the element
 ${}^3\text{Li}$
↖ atomic mass = # p and # of neutrons

of neutrons

${}^7_3\text{Li}$

lithium - 7

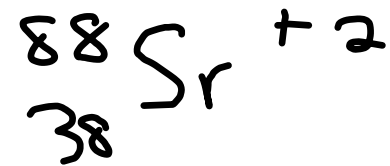
p 3 n 4 e⁻s 3



P 38

n 50

e⁻ 38



P 38

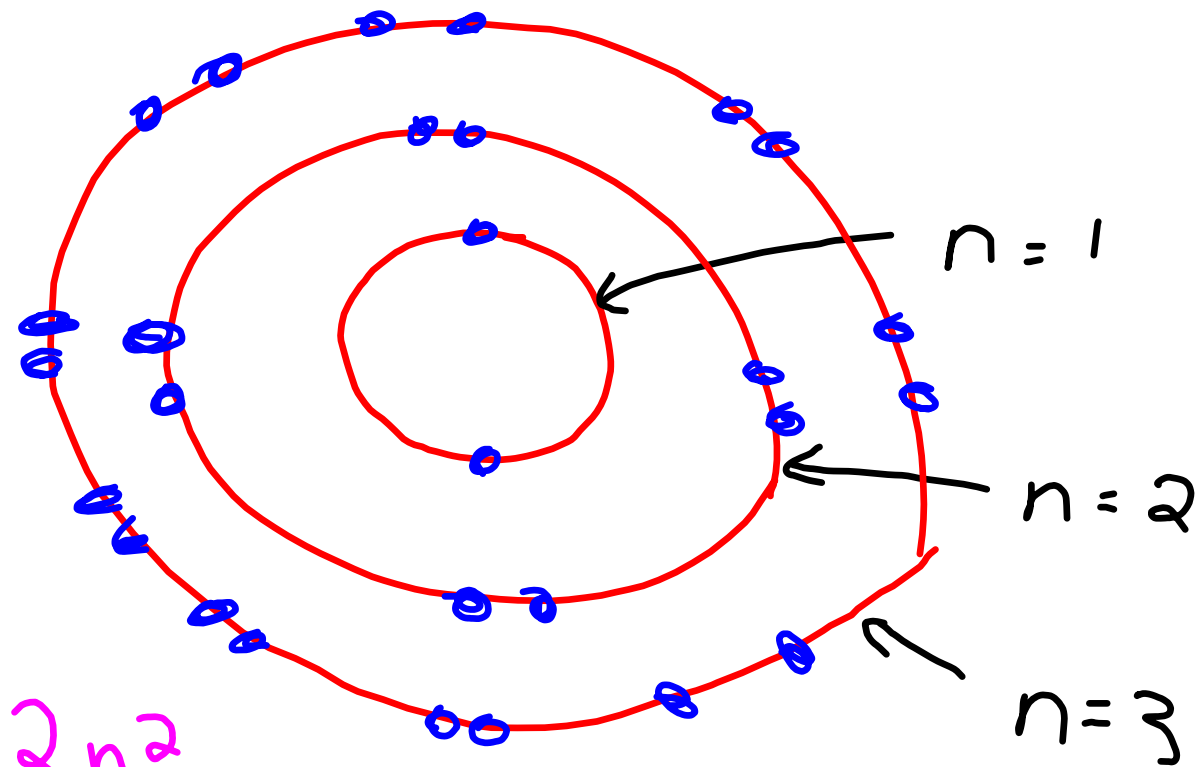
n 50

e⁻ 36

ion has a charge.

	P	n	e ⁻ s
¹⁰ ₄ Be	4	6	4
¹⁶ ₈ O ⁻²	8	8	10
²¹⁰ ₈₂ Pb ⁴⁺	82	128	78
²⁰⁶ ₈₂ Pb ⁺²	82	124	80

$$\begin{aligned}\text{atomic mass} &= p + n \\ \text{atomic \#} &= \frac{p}{n}\end{aligned}$$



$$2n^2$$

$$2(3)^2$$

$$(2)9 = 18 e^-$$

s block
Li Be

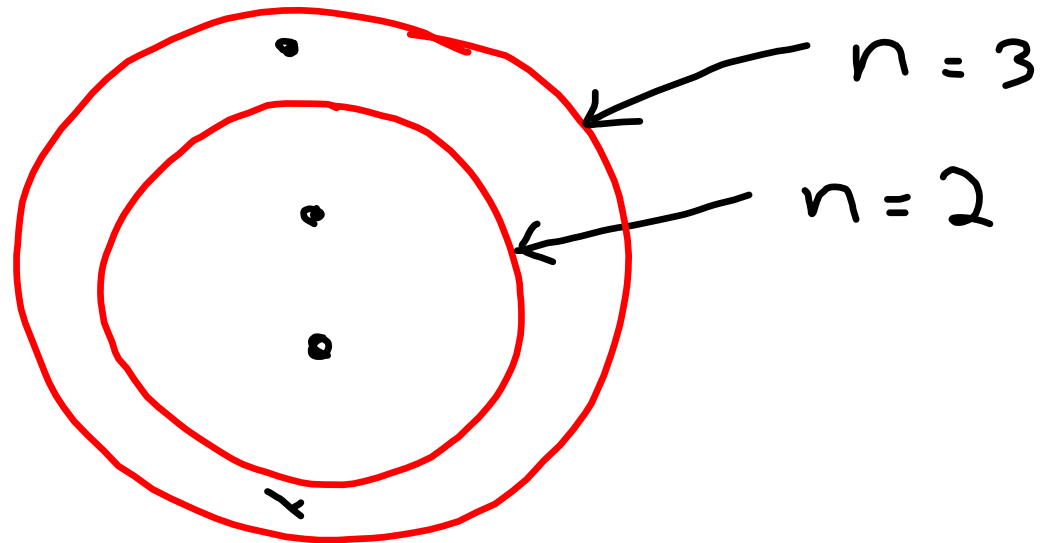
s block
95%

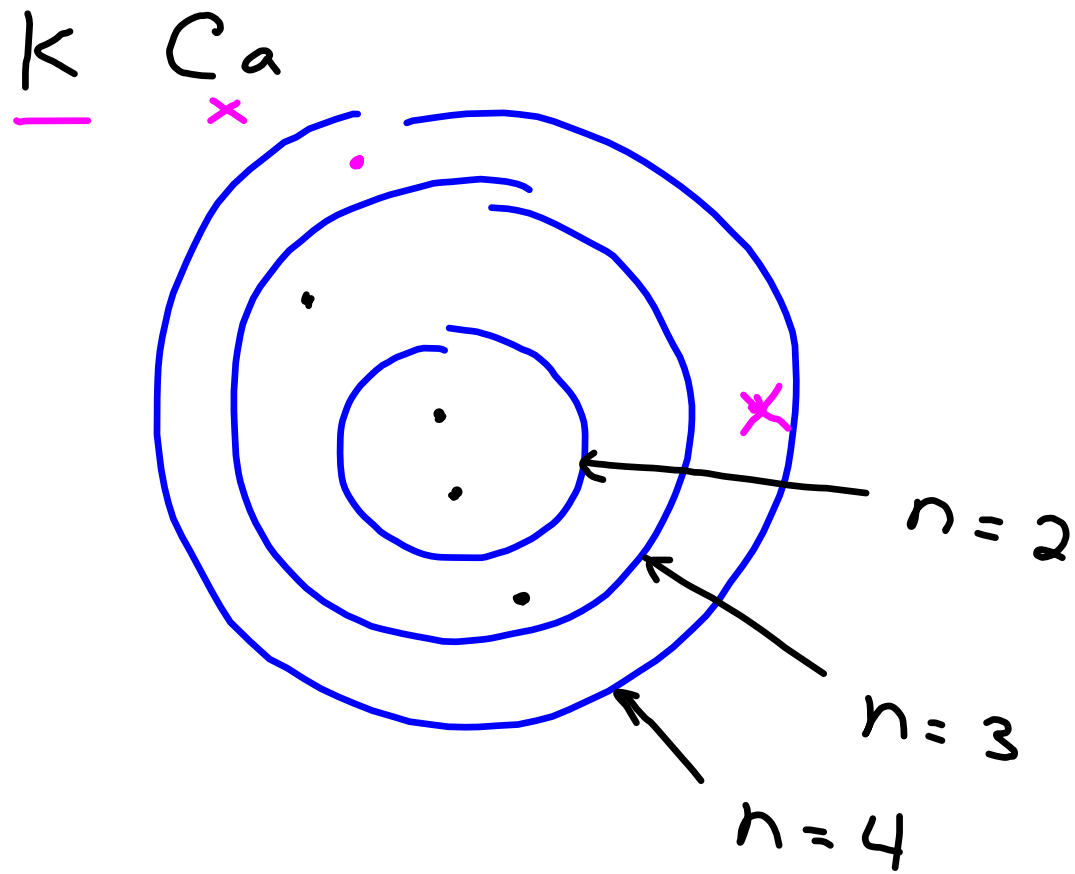
Li Be - 2 e⁻s allowed for
the s block no
matter the principle

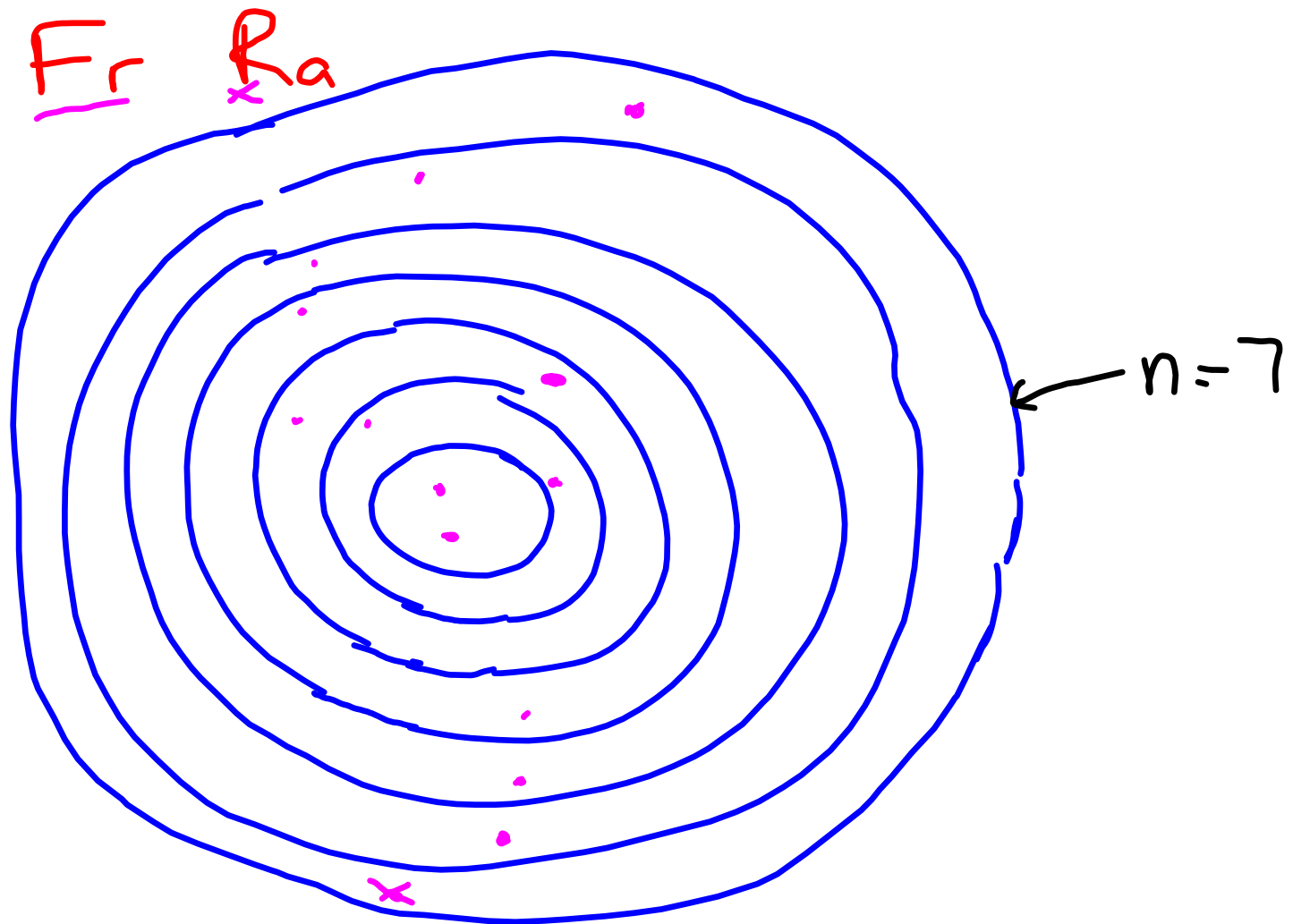


Na Mg
— x

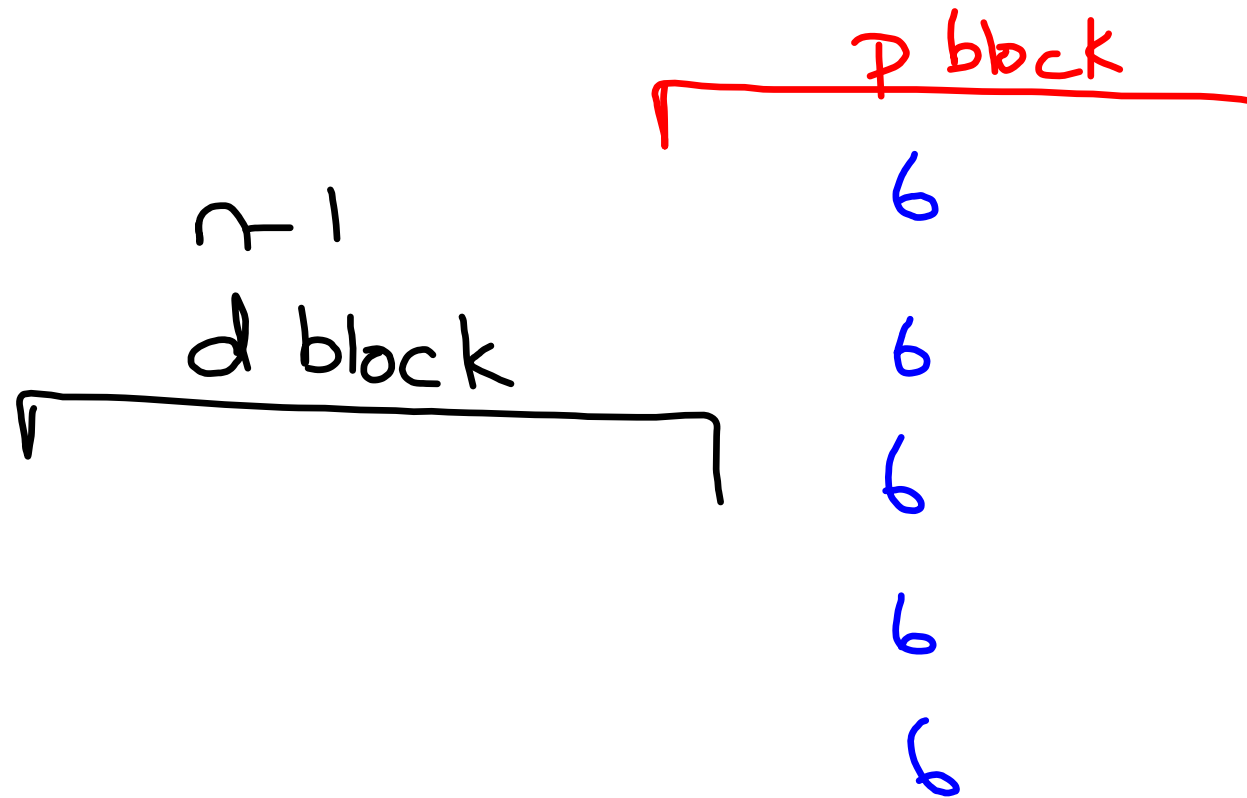
S-block







									$2n^2$		
1	H	He	$1s^2$						2		
2	Li	Be	$2s^2$						8		
	B	C	N	O	F	Ne	$2p^6$				
3	Na	Mg	$3s^2$						18		
	Al	Si	P	S	Cl	Ar	$3p^6$				
	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	$3d^{10}$



H $1s^1$

He $1s^2$

Li $1s^2 2s^1$

Be $1s^2 2s^2$

B $1s^2 2s^2 2p^1$

N $1s^2 2s^2 2p^3$

F $1s^2 2s^2 2p^5$

Ne $1s^2 2s^2 2p^6$

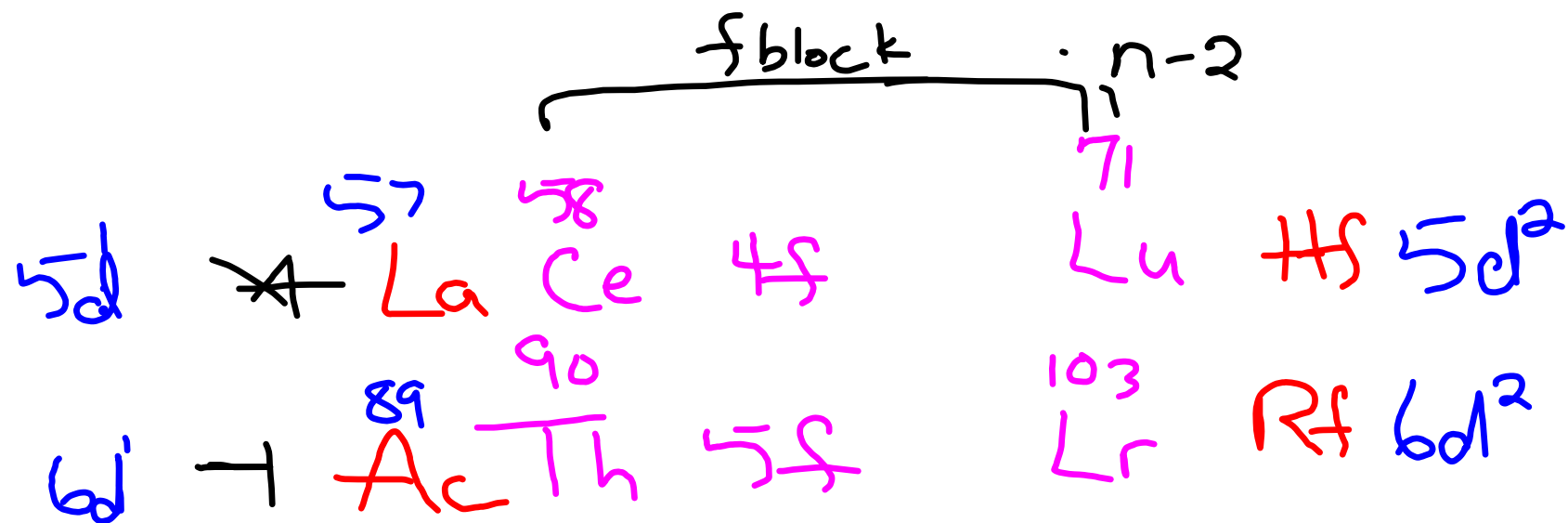
Mg $1s^2 2s^2 2p^6 3s^2$

Cl $1s^2 2s^2 2p^6 3s^2 3p^5$

Ca $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$

Fe $1s^2 2s^2 2p^6 3s^2 3p^4 4s^2 3d^6$

Pd $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$
 $3d^{10} 4p^6 5s^2 4d^8$



Wed Quiz

⑤ P n e

metal properties

solid but +lg

Shiny

can conduct heat and

Electricity

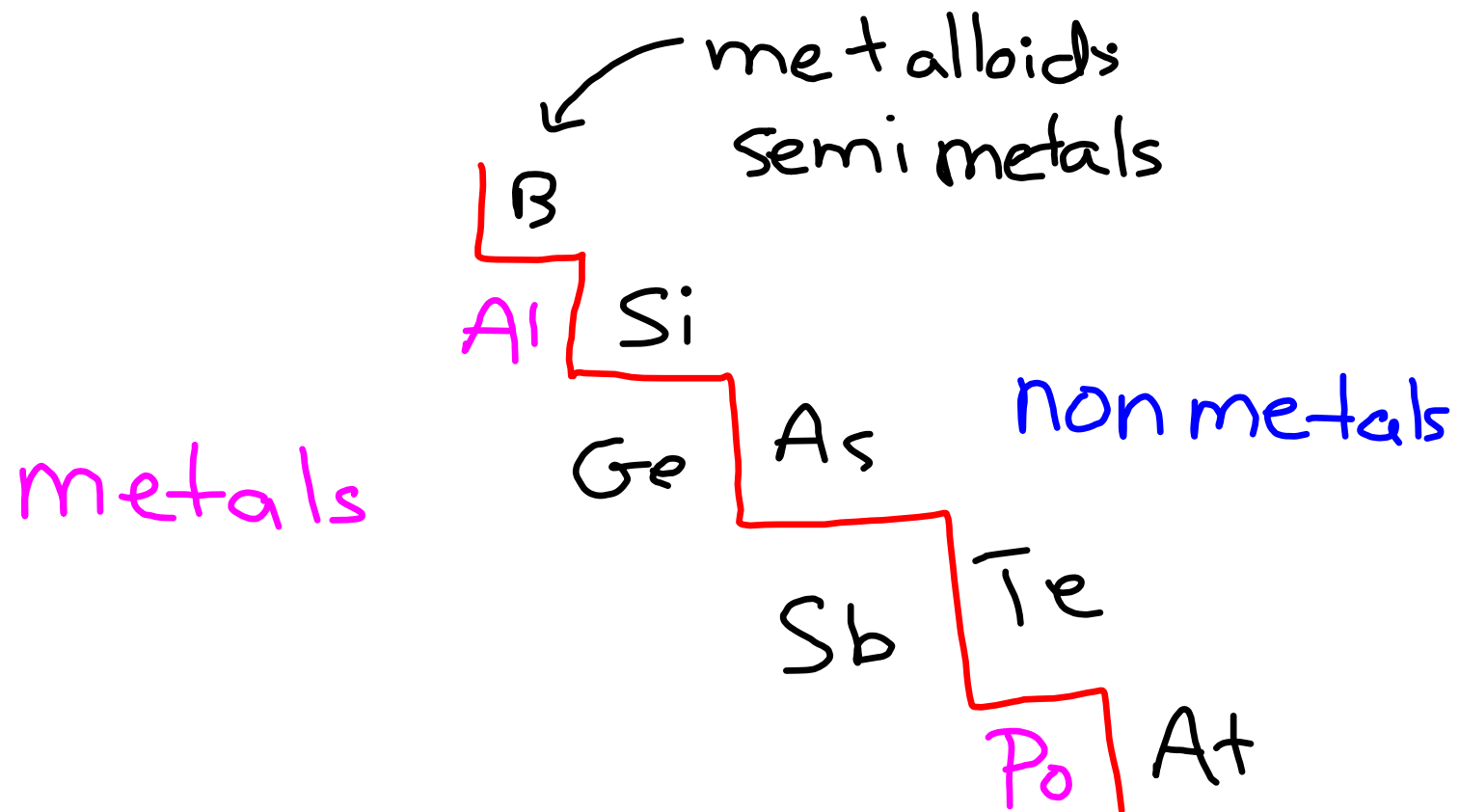
malleable

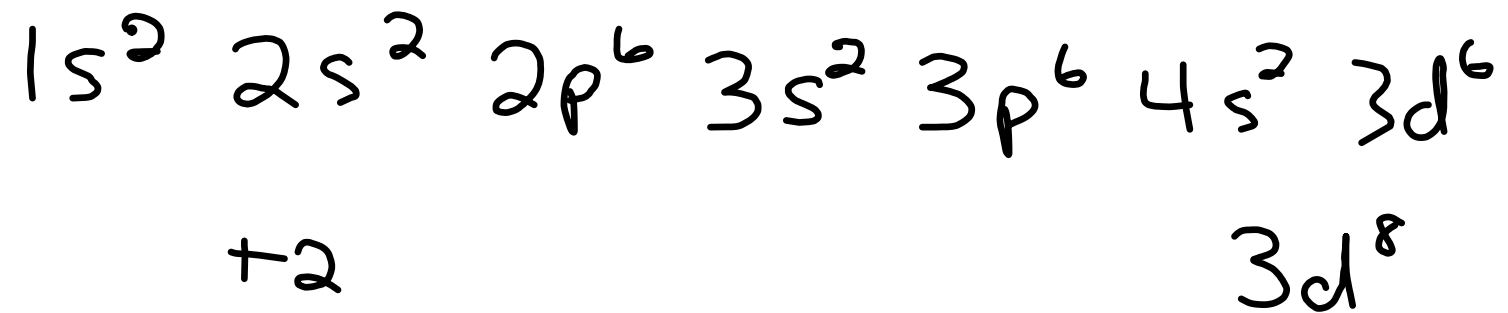
Ductile

positive ions

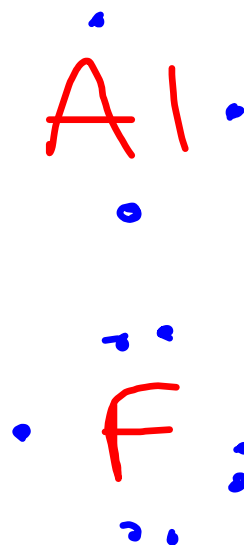
non metals

- ① dull
- ② solid, liquid, and gas
- ③ cannot conduct heat and electricity
- ④ brittle
- ⑤ negative ions
except for the noble
gasses

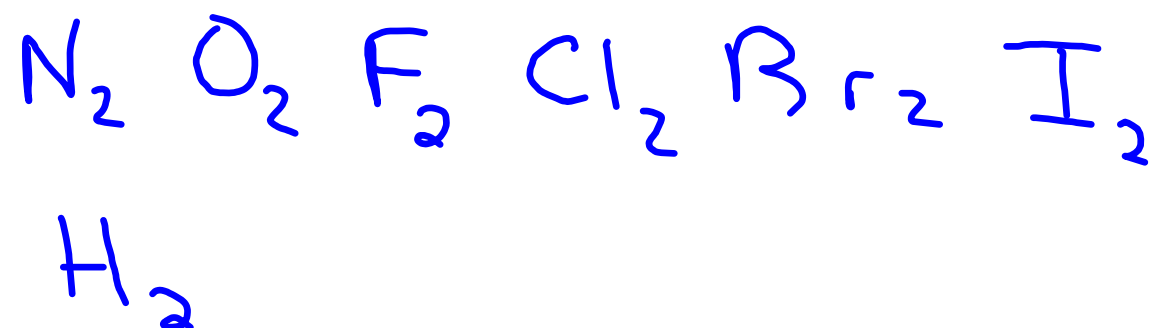




electron dot structures



diatomic molecules
2 element covalent
Share e⁻s



isotopes - same element
but different # of neutrons
thus a change in mass

$$\begin{array}{rcl}
 & \% & \\
 5. & 75.53 & 34.96885 \\
 & 24.47 & 36.9658
 \end{array}$$

$$(.7553)(34.96885) = 26.41197241$$

$$(.2447)(36.9658) = 9.04553126$$

$$35.45750367$$

$$35.46 \text{ amu}$$

amu = atomic mass units ⁹