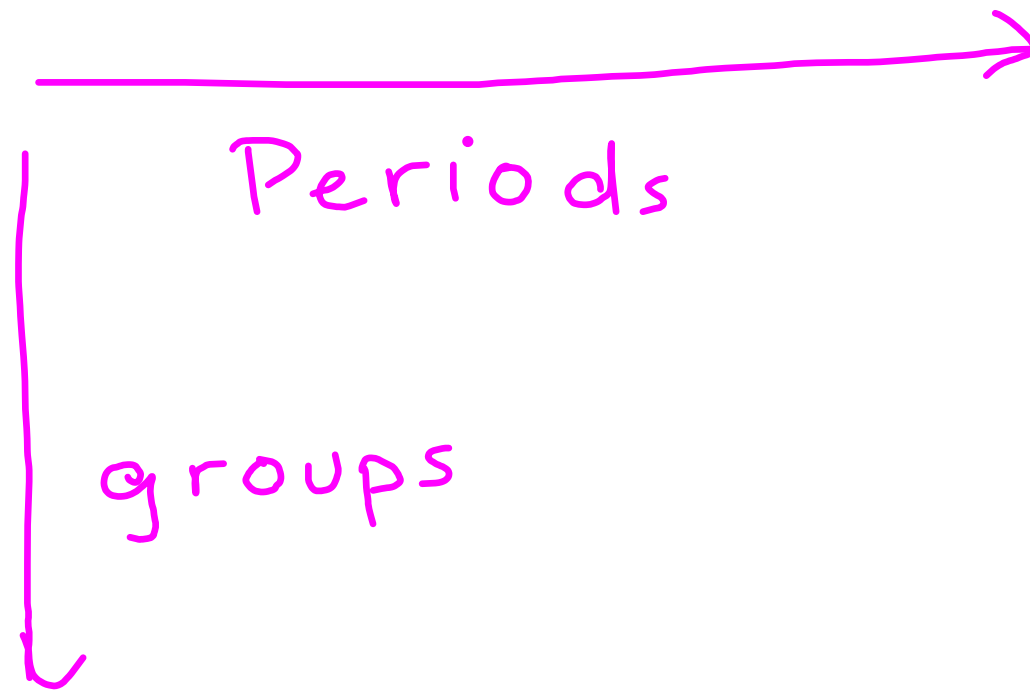




Periods = energy levels

1 H

2 Li

3 Na

4 K

5 Rb

6 Cs

7 Fr



groups react the
Same

Li
↓ alkali metals
Fr

Be → Ra alkaline earth
metals

Sc → Cu transition
metals

B → Tl boron group

C → Pb carbon group

N → Bi nitrogen group

O → Po oxygen group

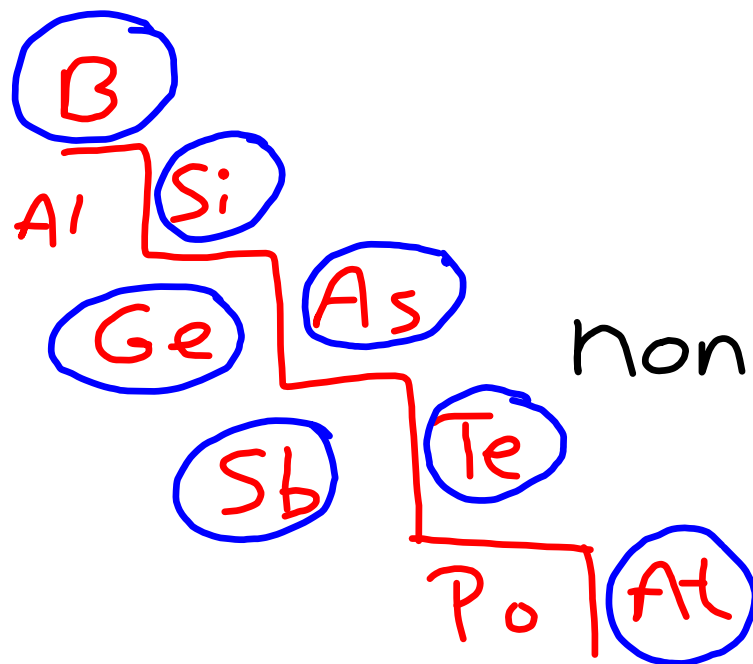
F → At halogens

He → Rn noble gases
"inert gases"

Ce → Lu rare-earth
metals

Th → Lr lanthanide
series
actinide
series

metals



non metals

○ metalloids

properties of metals

- ① good conductor of heat and electricity
- ② Shiny
- ③ ductile - make a wire
- ④ malleable - change the shape of it.

properties of nonmetals

- ① poor conductor of heat and electricity
- ② dull
- ③ brittle

metalloids
some of
have the properties
Of metals and nonmetals

Valance e^- s =
outer most e^- s

0
8A 8e⁻s in valance shell

He 2e⁻s

Ne

Ar

Kr

Xe

Rn

1A 1 e^- in the valance shell
- +1
Li
Na
K
Rb
Cs
Fr

2A 2 valance e's

Be +2

Mg

Ca

Sr

Ba

Ra

3 A 3 valance e^- s

B +3

Al

Ga

In

Tl

4A 4 valance e's

C ± 4

Si

Ge

Sn

Pb

5A

5 valance e^- s

N

-3

P

As

Sb

Bi

6A 6 valance e^- s

O -2

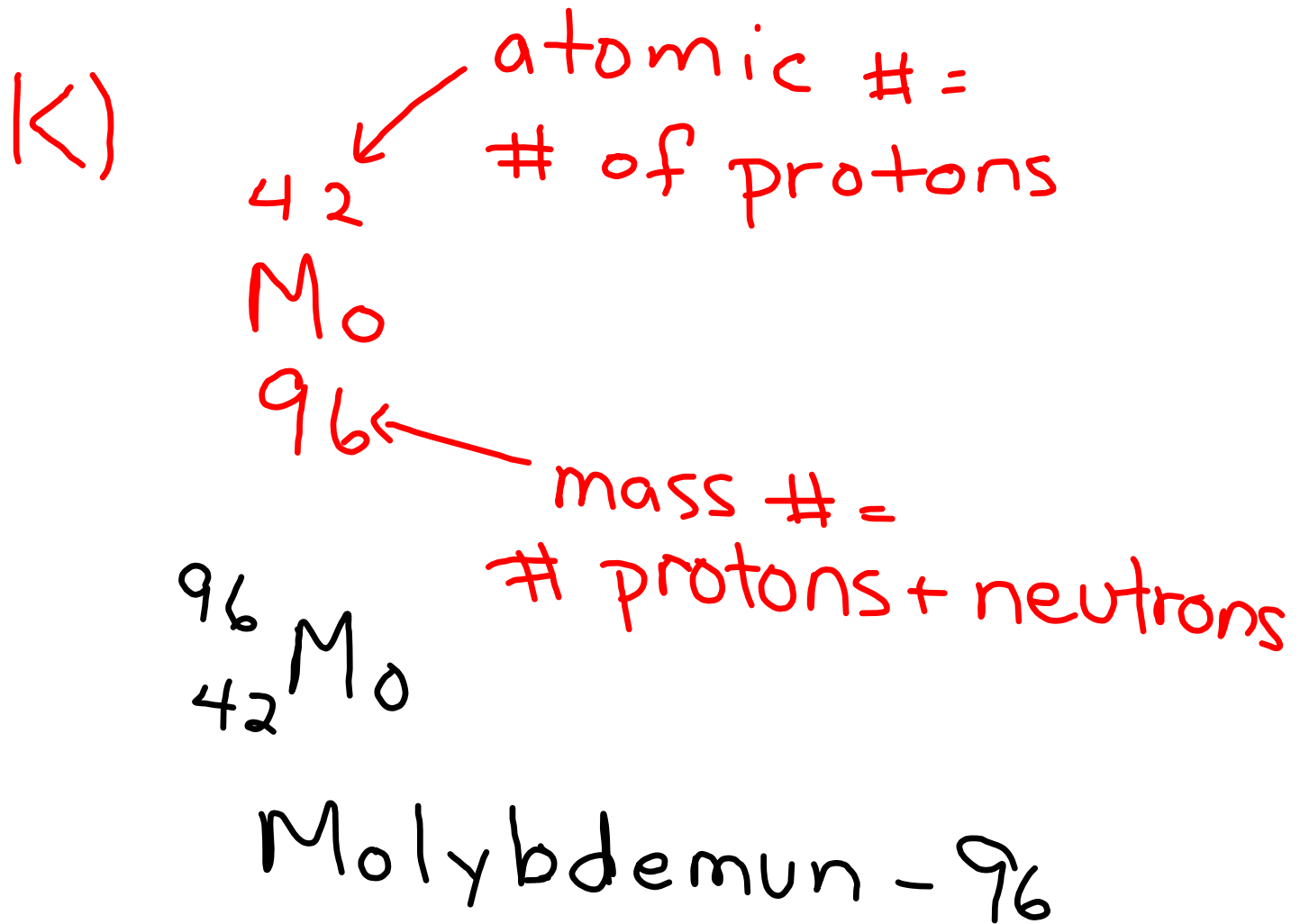
S

Se

Te

Po

Ce Cerium



Neutral atom $\#p = \#e^-$

atomic mass

$\underbrace{p \quad n}_{\text{atomic \#}}$ e

atomic #

mass	1	1	0
Charge	+1	0	-1

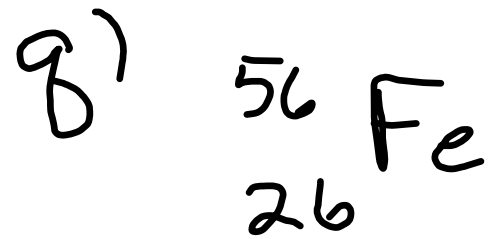
1) $20 e^-s$

$20 p$

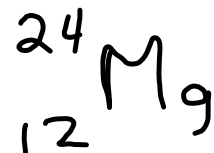
Ca

P) $\begin{matrix} 38 \\ Sr \\ 88 \end{matrix}$

$$50 + 38 = 88$$



$$26 + 30 = 56$$



$$P \quad 12$$

$$12$$

$$24 - 12 = 12$$

$$n \quad 24 - 12 = 12$$

$$e \quad 10$$

$$12$$

$$+12 \neq P$$

$$-10$$

$$+2$$

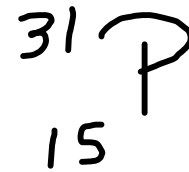
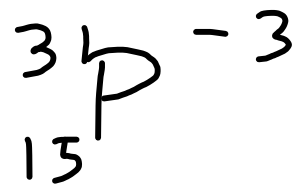
$$12 \overset{e^-}{\ominus} x = 2$$

$$12 - 2 = x$$

$$x = 10$$

$$12 = x + 2$$

$$12 - 2 = x$$



P 15

15

$$31 - 15 = 16$$

n 16

15

e 18

$$\begin{array}{r} +15 \\ \times \\ \hline -3 \end{array}$$

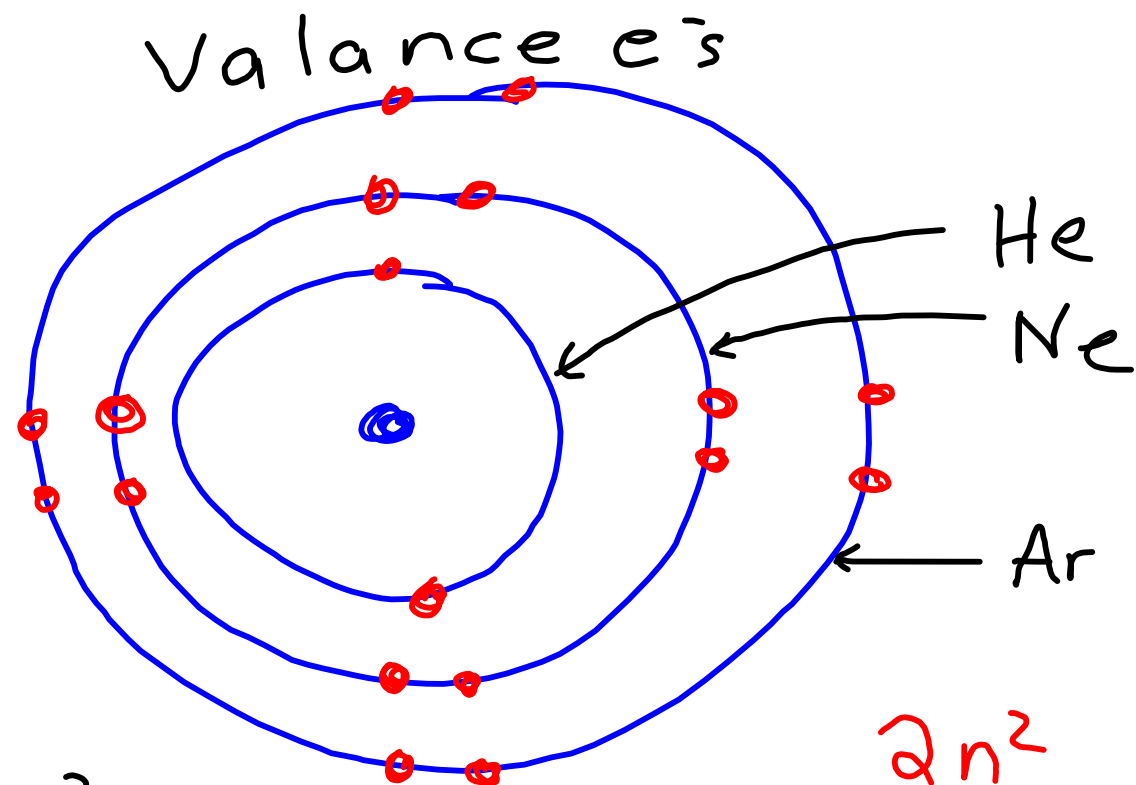
$$15 - x = -3$$

$$15 = -3 + x$$

$$15 + 3 = x$$

If - charge add the
of e^- s

If + charge subtract
the # of e^- s



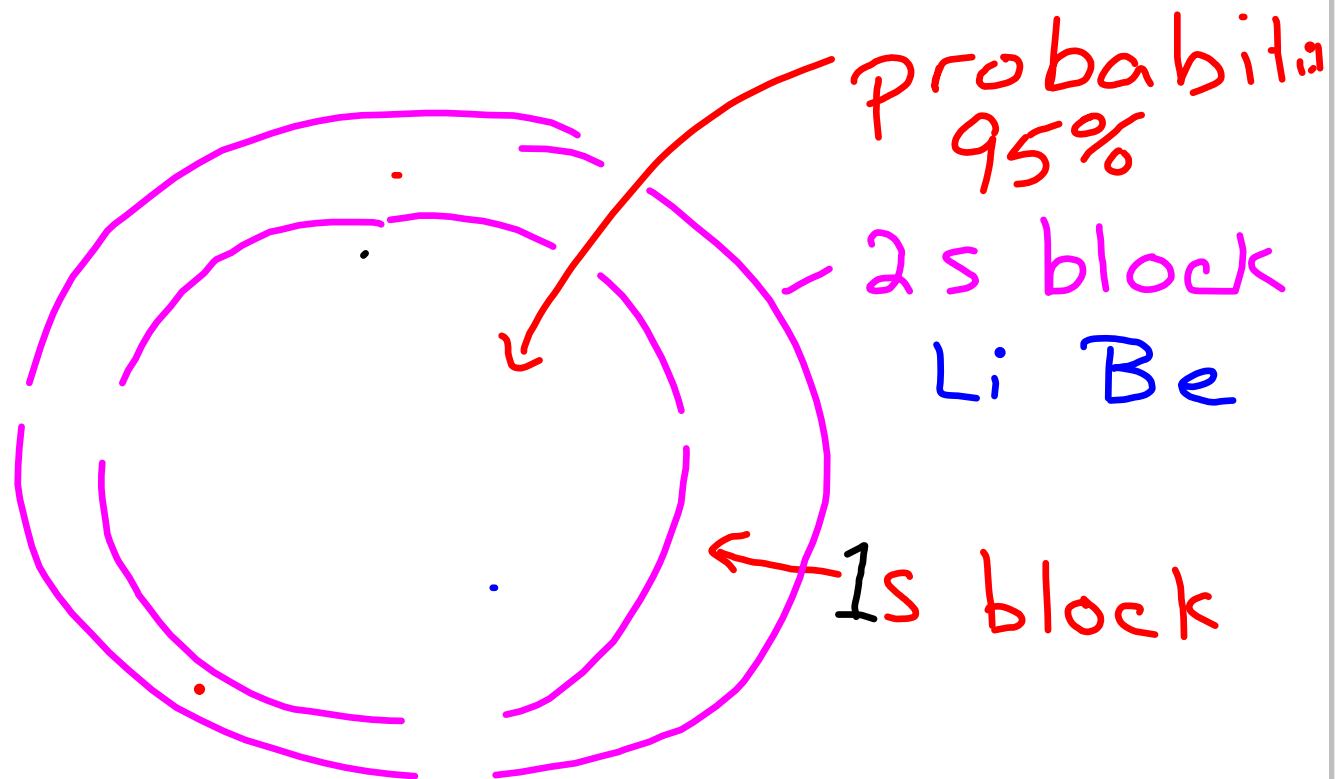
$$2(1)^2 = 2$$

$$2(2)^2 = 8$$

$$2(3)^2 = 18$$

$$2(4)^2 = 32$$

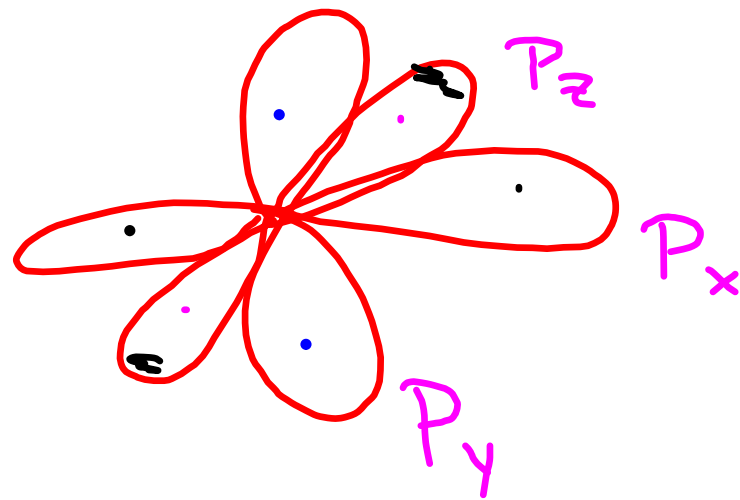
$2n^2$
 ↑
 Principal
 energy
 level



s block
Li Be

Fr Ra

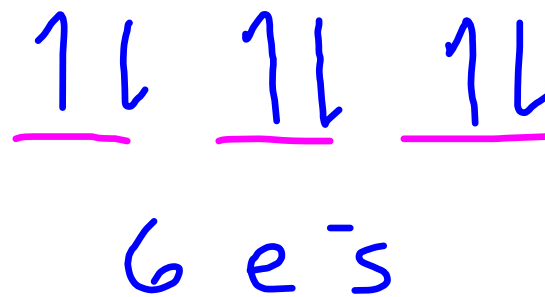
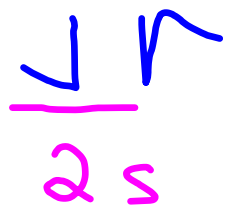
H and He
are in the
1s block



p block

B → Ne

6 elements
6 e⁻s.



$$2(2)^2 = 8$$



3 5 block

1 1 1 1

 p block

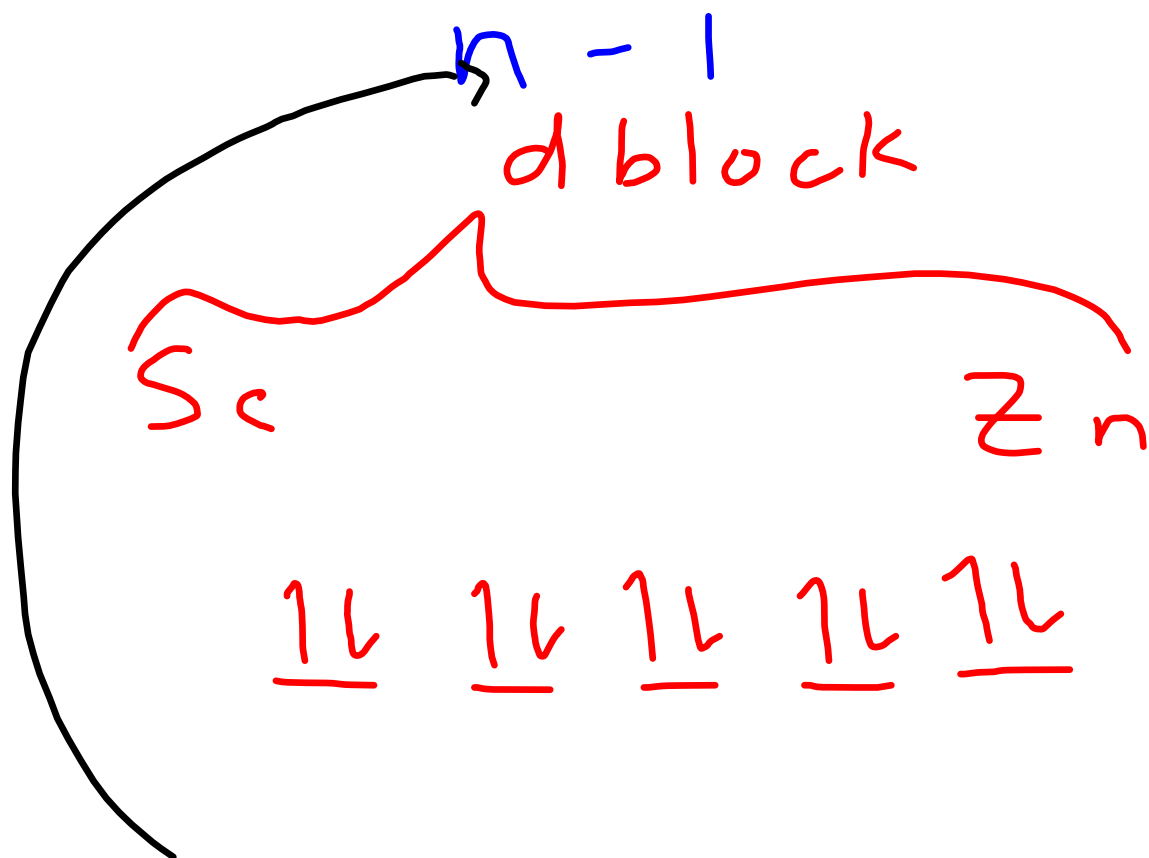
1L 1L 1L

p block

$$2(3)^2 = 18$$

$\frac{8}{10}$

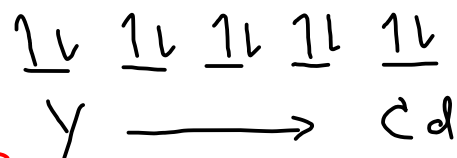
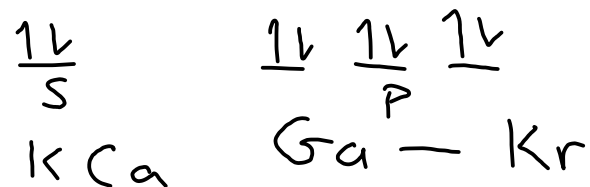
$$\begin{array}{r} 8 \\ \hline 10 \end{array}$$



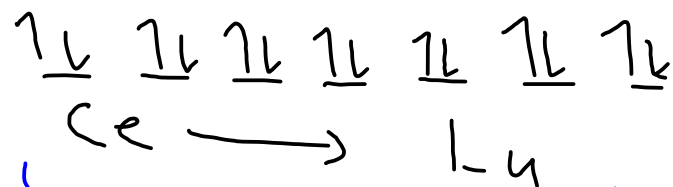
1s 1s 1s 1s 1s

principal energy level

4



$$\begin{array}{r} 2(4)^2 = 32 \\ \hline 18 \\ \hline 14 \text{ elements} \end{array}$$



$$\underbrace{\hspace{10em}}_{\substack{n-2 \text{ f-block} \\ 6-2=4}}$$

H 1 s¹ ← block
← # of e⁻

↑
principal energy level

He 1 s²

Li 1 s² 2 s¹ 1 s² 2 s¹; [He] 2 s¹

Be 1 s² 2 s²

electron configuration

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

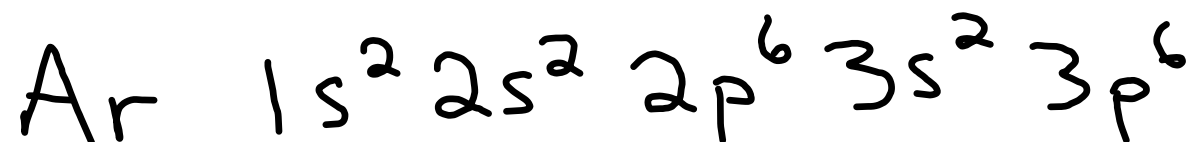
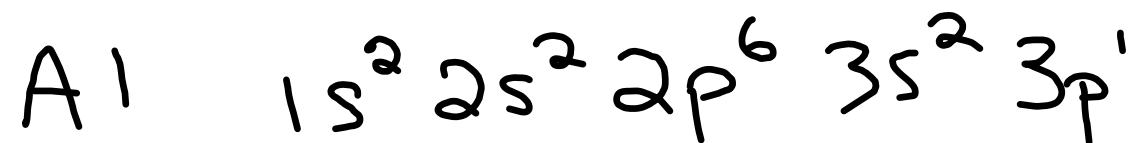
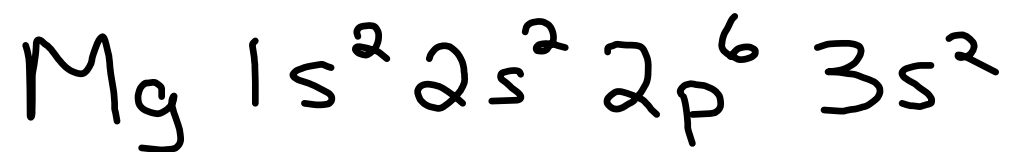
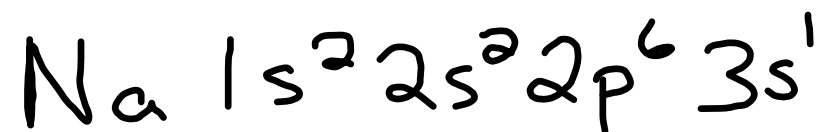
C $1s^2 2s^2 2p^2$

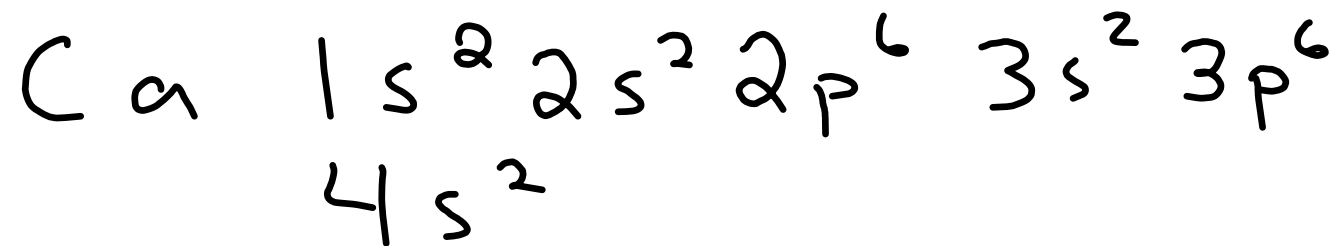
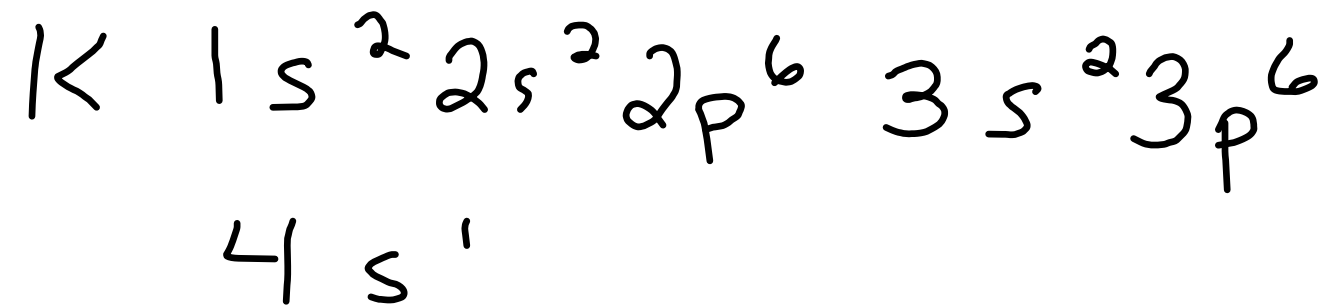
N $1s^2 2s^2 2p^3$

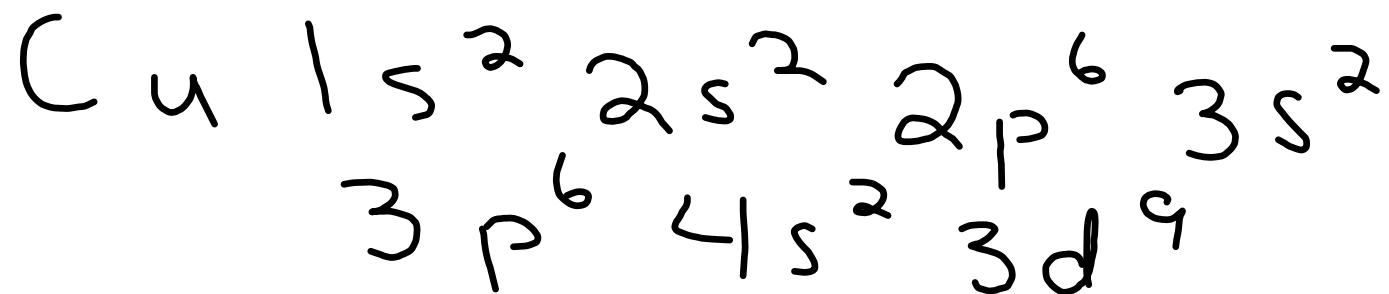
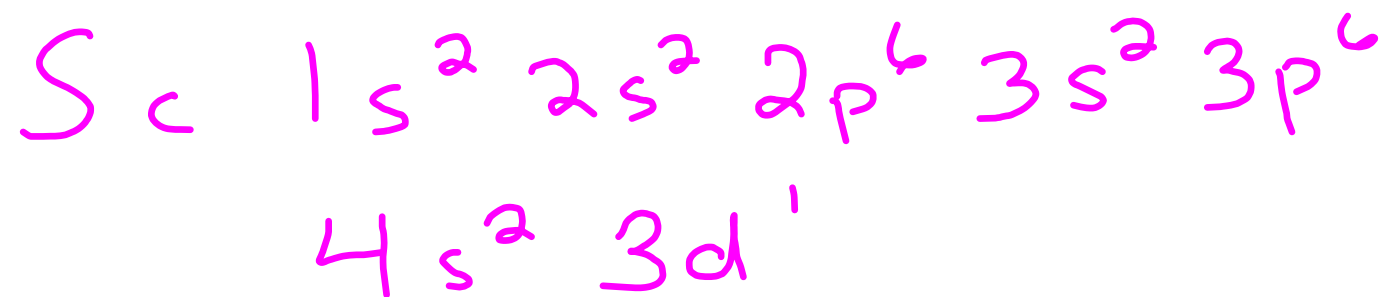
O $1s^2 2s^2 2p^4$

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

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







Quiz Tues

- ① # p, n, e's
- ② electron configuration

Au ~~$1s^2 2s^2 2p^6 3s^2 3p^6$~~

~~$4s^2 3d^{10} 4p^6 5s^2 4d^{10}$~~

~~$5p^6$~~ $6s^2 5d^9 4f^{14}$

proton and a noble gas
that is less than the element's
proton #

$[Xe] 6s^2 5d^9 4f^{14}$

last principal energy level,
the block and electrons.

