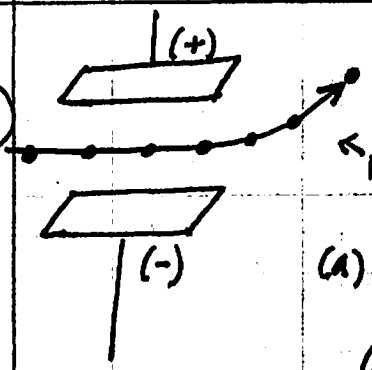
1.



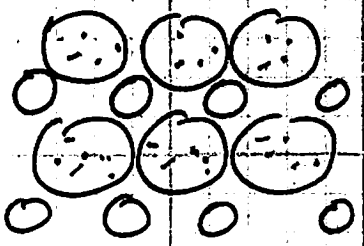
(a) The particle bends because it has an upward force acting on it due to the electric field between plates. (or, it is attracted to the positive plate, and/or repelled by the negative plate.)

(b) The particle must be negative charge to be attracted to the positive plate.

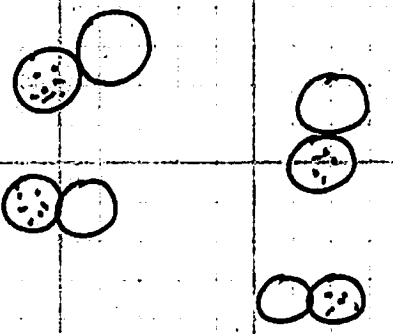
(c) As the charge on plates increases, the force on the particle will increase, so it will bend more sharply; "bending" will increase.

(d) As the mass of the particle increases, it will bend less. The force is same, since charge is the same (assuming the electric field is the only thing exerting force), so since $F = ma$, $a = \frac{F}{m}$ will be less as mass increases.

5. (i)



(ii)



(i) must be the ionic one. does not contain distinct molecules, just a crystal lattice

(ii) must be the molecular compound

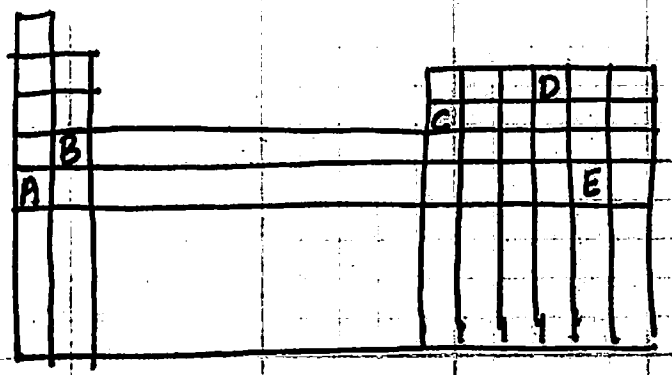
5b) "Molecular Compounds" are bonded covalently.

5c) out of Li_3PO_4, H_3PO_4, CS_2, $PbCl_2$, Cl_2,

only H_3PO_4, CS_2, and Cl_2 contain molecules

(Li_3PO_4 and $PbCl_2$ start with metals, so must be ionic, so do not contain molecules.)

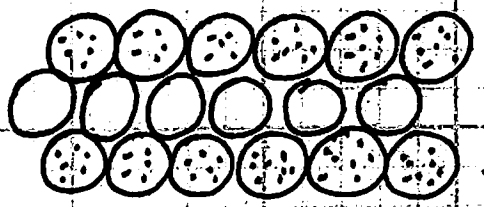
(7.)



What charge of ion will likely form?

A: (+1)
B: (+2)
C: (+3)
D: (-2)
E: (-1)

(8.)



← blue (anions)
← red (cations)
← blue (anions)

Q: is this KBr, K_2SO_4, $Ca(NO_3)_2$, or $Fe_2(SO_4)_3$

They say that a compound is pictured, so it must be neutral, with twice as many anions as cations. so it must be $\boxed{Ca(NO_3)_2}$, which has twice as many NO_3^{-1} ions (blue) as Ca^{+2} ions (red).

(8b) Which could be represented by picture:
SO_2, $MgCl_2$, K_2S, or N_2O ?

The compound must be ionic, not covalent, since it doesn't contain distinct molecules, but has a crystal lattice. so it must be $MgCl_2$ or K_2S (these 2 start w/ metals..).
but only $MgCl_2$ has a 2:1 ratio of anions to cations, so it could be $\boxed{MgCl_2}$.

(22.)

Isotopes: $^{31}_{16}X$, $^{31}_{15}X$, $^{32}_{16}X$

a) these two are of the same element (sulfur, with 16 protons). (b)
the middle one is Phosphorus, with only 15 protons.

(23) a) ^{40}Ar

39.948
Ar
18

$p + n = \text{mass \#}$

$18 + n = 40$

$n = 22$

18 protons
18 electrons (it is an atom, so neutral)
22 neutrons

b) ^{65}Zn: 30 p, 30 e, 35 n

c) ^{70}Ga: 31 p, 31 e, 39 n

d) ^{80}Br: 35 p, 35 e, 45 n

e) ^{184}W: 74 p, 74 e, 110 n

f) ^{243}Am: 95 p, 95 e, 148 n

(25)

Symbol	^{52}Cr	^{55}Mn	^{112}Cd	^{222}Rn	^{207}Pb
protons	24	25	48	86	82
neutrons	28	30	64	136	125
electrons	24	25	48	86	82
mass #	52	55	112	222	207

(27) a) $^{196}_{78}Pt$ b) $^{84}_{36}Kr$ c) $^{75}_{33}As$ d) $^{24}_{12}Mg$

(28) ^{129}Xe vs ^{130}Xe

How they are the same: both have 54 protons and 54 electrons. They are both chemically inert (except for a few compounds they form with Fluorine or oxygen. And when they do bond with F_2 / O_2, they bond in same way)

How they are different:
they have different masses, due to different numbers of neutrons. (Xe-129 has 75 neutrons, Xe-130 has 76 neutrons)
Xe-130 will have a slightly higher density than Xe-129, and Xe-130 will have a slightly lower average speed than Xe-129)
(A different number of neutrons could mean different radioactivities,

(32) 72.15% of Rb is Rb-85 (84.9118 amu)
27.85% of Rb is Rb-87 (86.9092 amu)
So atomic mass is

$(0.7215)(84.9118\ \text{amu}) + (.2785)(86.9092\ \text{amu})$

$= 61.26386\ \text{amu} + 24.20421\ \text{amu}$

$= 85.46808\ \text{amu} \rightarrow$ **85.47 amu**

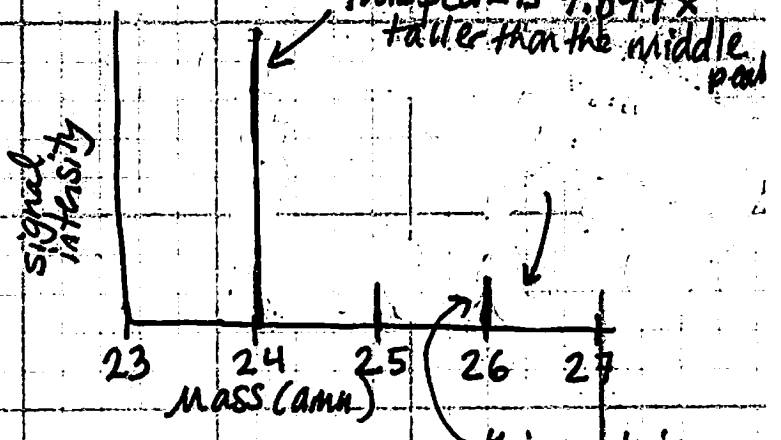
Check:

37
Rb
85.4678

(35) $(0.7899)(23.98504\ \text{amu}) = 18.9457831$
$+(.1000)(24.98584\ \text{amu}) = 2.498584$
$+(.1101)(25.98259\ \text{amu}) = 2.86068$

$24.30505026\ \text{amu}$

(a) **24.31 amu**



(49)

Symbol	$^{59}Co^{+3}$	$^{80}Se^{-2}$	$^{192}Os^{2+}$	$^{200}Hg^{2+}$
# protons	27	34	76	80
# neutrons	32	46	116	120
# electrons	24	36	74	78
Net charge	+3	2-	2+	2+

$^{31}_{}Ga$
69.723

(90.) gallium has 2 isotopes with masses of 68.926 amu and 70.925 amu.

(a) how many p, n in each... write symbols

68.926 amu $\approx$ 69 amu 69 − 31 = 38

Atomic # 31 so each has 31 protons

The one with mass of 68.926 has 31 protons, 38 neutrons with symbol $^{69}_{31}Ga$

70.925 amu $\approx$ 71 amu

This one has 31 protons, 40 neutrons, and symbol $^{71}_{31}Ga$

(b) if avg mass is 69.723, calculate the % abundances.

$(68.926)X + (70.925)(1-X) = 69.723$

$68.926X + 70.925 - 70.925X = 69.723$

$1.999x = 1.202$

$x = 0.601301$ $1 - .601301 = 0.398699$

so, 60.13% Ga-69, 39.87% Ga-71

In the above, X was the ~~percent~~ abundance of Ga-69, expressed as a decimal.

If you set it up with percents, you would do:

$$\frac{68.926Y + 70.925(100-Y)}{100} = 69.723$$

(94) Choose from Ar, H, Ga, Al, Ca, Br, Ge, K, O

Which one is:

a) an alkali metal: **K** (must be group IA, but not hydrogen)

b) an alkaline earth metal: **Ca** (group IIA)

c) a noble gas: **Ar** (group VIII A)

d) a halogen: **Br** (group VII A)

e) a metalloid **Ge** (see chart, page 50)

f) a nonmetal in group IA: **H**

g) a metal that forms a (+3) cation **Ga** or **Al** (group III A)

h) a nonmetal that forms a (-2) ion: **O** (group VI A)

i) an element that resembles aluminum.

Ga is in same group as Al, and both form a +3 ion.

so that is probably what "they" meant.

of course, K has a closer melting point to Al than Ga... and both K and Al are above H_2O on activity series...