

1) Classify the following elements as metal, semi-metal, or non-metal.

Ba metal Kr non-metal W metal Ge semi-metal In metal Se non-metal

2) Which two elements in (1) could combine to form an ionic compound? Three pairs are possible.

Ba + Se, W + Se, In + Se

3) Which elements in (1) would likely exist in atomic form?

all

4) Would any of the elements in (1) likely exist molecular form?

none (only H₂, N₂, O₂, F₂, Cl₂, Br₂, I₂)

5) Given the formula CuS, first describe this compound as ionic or molecular. How do you know?

Ionic, metal + non-metal, metals lose e⁻ to become cations, non-metals gain e⁻ to become anions.

6) Name the compound in (5).

Copper (II) sulfide

7) In each of the following the names are incorrect for the formula unit given. Make the correction.

1) Rh₂O rhodium(~~IV~~) ~~oxide~~

2) NiBr₂ nickel ~~bromide~~ bromide

3) VN vanadium(~~V~~) nitride

4) CaI₂ calcium(~~X~~) iodide

5) CrS₃ chromium(~~VI~~) ~~sulfite~~

6) GaP gallium ~~potasside~~ phosphide

7) Al₂Te₃ aluminum(~~X~~) telluride

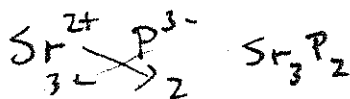
metal/semi-metal → ionic

Use Roman numerals for metal ions made from transition metals and Ga, In, Sn, Tl, Pb, Bi

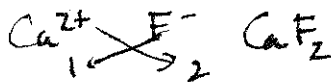
unlike Al, Ga can be +1 or +3 so we need to specify charge w/ Roman numerals

8) Determine the formula unit using the crossing rule for the ionic compound that forms in the reaction of

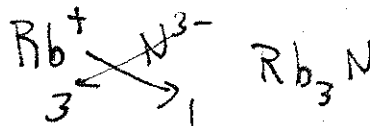
a) Sr + P



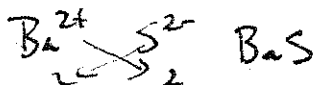
b) Ca + F



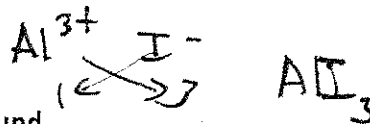
c) Rb + N



d) Ba + S



e) Al + I



9) Circle the combinations that would give a molecular compound.

a) Sc + N

b) H + I

c) O + F

d) Br + Cl

non-metal + non-metal → molecular compd
non-metal + semi-metal → molecular compd > usually but not always

Symbol	$^{103}_{45}\text{X}^{3+}$ Rh	$^{200}_{80}\text{Hg}$	$^{159}_{65}\text{X}^{3+}$ Tb	$^{94}_{40}\text{X}^{2-}$ Zr
# of Particles	103 45?	200 90?	? 65X	94? 40?
Neutrons	58	120	94	54
Atomic Number	45	80	65	40
Mass Number	103	200	159	94
Protons	45	80	65	40
Electrons	42	80	62	42

