Friday exam 2 thru material covered Wed.

Table of polyatomic ion names (Table 5-5)
needs to be memorized for quiz next week.
(names, formulas, charges)

Homework 5 posted today due Thurs at Noon

Molecules: nonmetals only (metalloids too)
Covalent bonds (Lewis structures)

Ionic compounds: Nonmetal + Metal

Ionic bonds hold them together
attraction of oppositely charged particles

\[
\text{Na}^{+} + \text{Cl}^{-} \rightarrow \text{Na}^{+} + \text{Cl}^{-}
\]

Oppositely charged particles (strong force)

\[\text{NaCl (table salt)}\text{ is an ionic compound}\]
Ionic compounds are not made of individual "NaCl" molecules. They form an ionic lattice - 3-dimensional network of oppositely charged ions, which repeats many times.

Molecular compound - made of individual molecules.

H₂O is a molecular compound.

\[
\begin{align*}
\text{H-O-H} & \\
\text{H-O-H} & \\
\text{H-O-H} & \\
\text{H-O-H} & \\
\end{align*}
\]

Covalent bond  \( \xrightarrow{\text{shared equally}} \)  Polar covalent bond  \( \xrightarrow{\text{shared unequally}} \)  Ionic bond  \( \xrightarrow{\text{results from transfer of } e^- \text{ (no sharing)}} \)

\( \text{H} \cdot \text{H} \)  \( \text{H-F} \)  \( \text{Na}^+ \cdot \text{Cl}^- \)  \( (= \text{NaCl}) \)  \( (= \text{NaCl} \text{ formula}) \)

Electron density diagram: probability of finding an electron.
F is an electron "hug"!

F is electronegative (it "grabs" extra $e^-$ density)

$F$ is the most electronegative of all elements

$C \# O$ which is more electronegative?

(closer to $F$) \& more right

$N \# As$ which is more $e^-$ neg?

(higher up on table)
If 2 identical atoms are covalently bonded, 
electron density is shared equally! Covalent bond

- If 2 different atoms are covalently bonded, 
it's usually a polar covalent bond

Which bond is more polar?

\[ \text{F} - \text{O} \text{ vs. } \text{F} - \text{C} \]

Most electronegative

F is much more electronegative than carbon

So the F-C bond is more polar than the F-O bond

(More unequal sharing)

Partial negative charge

(Electronic density)

(missing some e-)

Partial positive charge

Greek lowercase = "partial"

\[ \delta^+ \]
Covalent  Polar covalent  Ionic

Cl−-Cl  Cl−-Si\(^{+}\)  Na\(^{+}\) Cl\(^{-}\)

more electroneg

(draw metal first)

formula = NaCl

Naming compounds (binary compounds)

(binary ionic compounds) made of 2 elements

binary ionic compound where metal is main-group

metal & nonmetal

Mg & Cl

1) predict charges

\( \text{Mg}^{2+} / \text{Cl}^{-} \)

Cation  2) cross over \( \text{anion} \)

\( \text{MgCl}_2 \) = formula

to name

1) start w/ cation (metal) = same name as element
2) name anion (nonmetal) w/ element root + "ide"

\( \) (cation) \( \) (anion)

Magnesium chloride

No need to indicate quantity

Calcium nitride formula = ?

1) write ions: \( \text{Ca}^{2+} \quad \text{N}^{3-} \)

2) cross over: \( \text{Ca}_3\text{N}_2 \)
$K_2S$  

name: potassium sulfide

$K^+ S^{2-}$