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Section \_\_\_\_\_

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### Pre-Lab Study Questions

1. Where are the valence electrons in an atom?

In the outermost shell.

good answers, mostly correct

The valence electrons are not just for to be in outer shell

2. How are positive and negative ions formed?

They are formed when an atom takes an electron from another atom. The atom with less electron is the positive ion, the electron with more electrons are negative ions?

3. How do subscripts represent the charge balance of ions?

The subscripts represents how much of each element is required to balance the charge of the atom out.

4. Why are electrons shared in covalent compounds?

Electrons are shared in covalent compounds because the electronegativity

Number 4 is cut off

Electron-Dot Structure	Loss or Gain of Electrons	Electron Arrangement of Ion	Ionic Charge	Symbol of Ion	Name of Ion
Na <sup>•</sup>	lose 1e <sup>-</sup>	2-8	1+	Na <sup>+</sup>	sodium ion
•N•	gain 3e <sup>-</sup>	2-8 <sup>-</sup>	3-	N <sup>3-</sup>	nitride ion
Al <sup>•</sup>	lose 3e <sup>-</sup>	2-8	3+	Al <sup>3+</sup>	aluminium ion
•Cl:	gain 1e <sup>-</sup>	2-8-8	1-	Cl <sup>-</sup>	chloride ion
Ca <sup>•</sup>	lose 2e <sup>-</sup>	2-8-8	2+	Ca <sup>2+</sup>	Calcium ion
•O:	gain 2e <sup>-</sup>	2-8	2-	O <sup>2-</sup>	oxide ion

try putting the correct charges of the electrons

dot diagrams are correct

## B.2 Formulas of ionic compounds

Name	Positive Ion <sup>cation</sup>	Negative Ion <sup>anion</sup>	Formula
Sodium chloride	$\text{Na}^+$	$\text{Cl}^-$	$\text{NaCl}$
Magnesium chloride	$\text{Mg}^{2+}$	$\text{Cl}^-$	$\text{MgCl}_2$
Calcium oxide	$\text{Ca}^{2+}$	$\text{O}^{2-}$	$\text{CaO}$
<sup>+1</sup> <sup>-3</sup> Lithium phosphide	$\text{Li}^+$	$\text{P}^{3-}$	$\text{Li}_3\text{P}$
<sup>+3</sup> <sup>-2</sup> Aluminum sulfide	$\text{Al}^{3+}$	$\text{S}^{2-}$	$\text{Al}_2\text{S}_3$
<sup>+2</sup> <sup>-3</sup> Calcium nitride	$\text{Ca}^{2+}$	$\text{N}^{3-}$	$\text{Ca}_3\text{N}_2$

## B.3 Names of ionic compounds

There are some work on the side to show that you have been working on this correctly

nice job writing cation/anion on the top to indicate which ones are which

### C.3 Names of ionic compounds

$\text{Cu}_2\text{S}$	Copper(I) sulfide
$\text{Fe}_2\text{O}_3$	Iron(III) oxide
$\text{CuCl}_2$	Copper(II) chloride
$\text{FeS}$	Iron sulfide
$\text{Ag}_2\text{O}$	Silver oxide
$\text{FeBr}_2$	Iron(II) bromide

Looks like you listened when writing the compound names  
when a metal is combined with a nonmetal



## D.2 Formulas of ionic compounds

Name	Positive Ion	Negative Ion	Formula
Potassium carbonate	$K^+$	$CO_3^{2-}$	$K_2CO_3$
Sodium nitrate	$Na^+$	$NO_3^-$	$NaNO_3$
Calcium bicarbonate	$Ca^{2+}$	$HCO_3^-$	$Ca(HCO_3)_2$
Aluminum hydroxide	$Al^{3+}$	$OH^-$	$Al(OH)_3$
Lithium phosphate	$Li^+$	$PO_4^{3-}$	$Li_3PO_4$
Potassium sulfate	$K^+$	$SO_4^{2-}$	$K_2SO_4$

## D.3 Names of ionic compounds

Using the polyatomics chart helped with this section

$CaSO_4$	Calcium sulfate
$Al(NO_3)_3$	Aluminum Nitrate
$Na_2CO_3$	Sodium carbonate
$MgSO_3$	Magnesium sulfate
$Cu(OH)_2$	Copper hydroxide
$Mg_3(PO_4)_2$	Magnesium phosphate

Reference to the polyatomics chart

Laboratory 7

Report Sheet - Lab 7

E.2 Physical properties

Compound	Appearance	Density	Melting Point

E.3 Electron-dot structures

Overall answers are correct and the packet is fully complete

Compound	Electron-Dot Structure	Name
H <sub>2</sub> O	$\begin{array}{c} \cdot\cdot \\ \text{H} : \text{O} : \\ \cdot\cdot \\ \text{H} \end{array}$	Dihydrogen monoxide Could also be hydrogen dioxide
SBr <sub>2</sub>	$\text{Br} : \overset{\cdot\cdot}{\underset{\cdot\cdot}{\text{S}}} : \text{Br}$	Sulfur bromide
PCl <sub>3</sub>	$\begin{array}{c} \cdot\cdot \quad \cdot\cdot \quad \cdot\cdot \\ \cdot\cdot \text{Cl} : \text{P} : \text{Cl} \cdot\cdot \\ \cdot\cdot \quad \cdot\cdot \quad \cdot\cdot \\ \cdot\cdot \quad \cdot\cdot \\ \cdot\cdot \text{Cl} \cdot\cdot \end{array}$	phosphorus trichloride
CBr <sub>4</sub>	$\begin{array}{c} \cdot\cdot \quad \cdot\cdot \\ \cdot\cdot \text{Br} : \\ \cdot\cdot \quad \cdot\cdot \\ \cdot\cdot \text{Br} : \text{C} : \text{Br} \cdot\cdot \\ \cdot\cdot \quad \cdot\cdot \\ \cdot\cdot \text{Br} : \\ \cdot\cdot \quad \cdot\cdot \end{array}$	Carbon tetrabromide
SO <sub>3</sub>	$\begin{array}{c} \cdot\cdot \\ \cdot\cdot \quad \cdot\cdot \\ \cdot\cdot \text{O} : \text{S} : \text{O} \cdot\cdot \\ \cdot\cdot \quad \cdot\cdot \\ \cdot\cdot \text{O} \cdot\cdot \end{array}$	Sulfur trioxide

Overall on this section, the dot diagrams are spot on

## F. Electron Dot Structures and Molecular Shape

Some parts on this were confusing  
but managed to answer

Formula	1. Electron dot Structure	2. Total number of electron groups	3. Electron geometry	4. Bond angle	5. Number of bonded atoms	6. Molecular geometry	7. Polar or nonpolar?
H <sub>2</sub> O	$\begin{array}{c} \cdot\cdot \\ \text{H}:\ddot{\text{O}}: \\ \cdot\cdot \\ \text{H} \end{array}$	6	tetrahedral	105	2	bent	polar
SBr <sub>2</sub>	$\begin{array}{c} \cdot\cdot \\ \cdot\cdot \\ \text{Br}:\ddot{\text{S}}:\text{Br} \\ \cdot\cdot \\ \cdot\cdot \end{array}$	4	tetrahedral	105	3	bent	polar
NCl <sub>3</sub>	$\begin{array}{c} \cdot\cdot \\ \cdot\cdot \\ \text{Cl}:\ddot{\text{N}}:\text{Cl} \\ \cdot\cdot \\ \cdot\cdot \\ \text{Cl} \end{array}$	4	tetrahedral	107.5	4	trigonal pyramid	polar
CBr <sub>4</sub>	$\begin{array}{c} \cdot\cdot \\ \cdot\cdot \\ \text{Br}:\ddot{\text{C}}:\text{Br} \\ \cdot\cdot \\ \cdot\cdot \\ \text{Br} \end{array}$	4	tetrahedral	109	5	tetrahedral	non polar
SO <sub>3</sub>	$\begin{array}{c} \cdot\cdot \\ \cdot\cdot \\ \text{O}:\ddot{\text{S}}:\text{O} \\ \cdot\cdot \\ \cdot\cdot \\ \text{O} \end{array}$	3	trigonal polar	120	4	trigonal plane	polar
CO <sub>2</sub>	$\begin{array}{c} \cdot\cdot \\ \cdot\cdot \\ \text{O}:\ddot{\text{C}}:\text{O} \\ \cdot\cdot \\ \cdot\cdot \end{array}$	2	linear	180	3	linear	polar
NO <sub>3</sub> <sup>-</sup>	$\begin{array}{c} \cdot\cdot \\ \cdot\cdot \\ \text{O}:\ddot{\text{N}}:\text{O} \\ \cdot\cdot \\ \cdot\cdot \\ \text{O} \end{array}$	4	tetrahedral	107.5	4	trigonal pyramid	polar
CHCl <sub>3</sub>	$\begin{array}{c} \text{Cl} \\ \text{H}:\ddot{\text{C}}:\text{Cl} \\ \cdot\cdot \\ \text{Cl} \end{array}$	4	tetrahedral	109	5	tetrahedral	non polar