

Unit 2 Review Sheet

1. Vocabulary:

- a. ionic bond – a bond between a cation and anion where electrons are transferred (from cation to anion)
- b. covalent bond – a bond between two nonmetals where electrons are shared (localized)
- c. metallic bond – a bond between two metals where electrons are shared and create a “sea of electrons” (delocalized)

2. Describe the octet rule, what do we use it for? Are there any exceptions to the octet rule? Explain

The octet rule tells us that all atoms want to have a full outer energy level of 8 valence electrons to act like a noble gas and become stable. Hydrogen and Helium follow the duet rule because they only have one energy level.

3. Complete the following table

	ionic bonds	covalent bonds	metallic bonds
types of elements involved (metal, nonmetal)	Cation + Anion Metal + Nonmetal Polyatomic + Nonmetal Metal + Polyatomic	Nonmetal + Nonmetal	Metal + Metal
what happens to the e- (give/take or share or sea of e-)	Transfer from cation to anion	Share	Share to create a sea of electrons
List all the properties of compounds with these bonds	Neutral solid salts High melting & boiling points Most dissolve in water Do not conduct electricity unless dissolved in water	Can form solids, liquids, or gases Low melting & boiling points Do not conduct electricity	Malleable Ductile Conductors of heat and electricity Lustrous

4. Complete the following table

ionic bonds= Metal + Nonmetal or polyatomic ion. Name the metal then change the nonmetals ending to “ide”

covalent bonds= All nonmetals. Use prefixes, the first nonmetal use its full name change the last one to “ide”

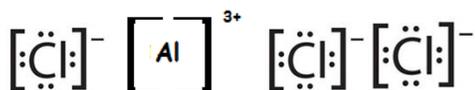
Type	Formula	Name	Type	Name	Formula
I or M	K ₂ S	Potassium sulfide	I or M	Mercury(I) iodide	HgI
I or M	SrI ₂	Strontium iodide	I or M	Strontium silicate	SrSiO ₄
I or M	NaC ₂ H ₃ O ₂	Sodium acetate	I or M	Carbon tetrachloride	CCl ₄
I or M	N ₂ O ₃	Dinitrogen trioxide	I or M	Cesium phosphide	Cs ₃ P
I or M	SI ₂	Sulfur diiodide	I or M	Disilicon pentahydride	Si ₂ H ₅

5. a. What type of compound would aluminum and chlorine form? (**ionic or molecular**)

b. Write out the formula that they form (remember to write the charges for each ion then switch the charges): **AlCl₃**

c. Name the compound: **Aluminum Chloride**

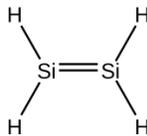
c. Draw the lewis dot structure for the compound:



6. a. What type of compound is Si₂H₄? (**Ionic or molecular**)

b. Name the compound: **Disilicon Tetrahydride**

c. Draw the lewis dot structure for the compound:



7. All together

	Bond type (Circle one)	<p>a) if covalent draw the dot structure and use lines to show the sharing e-</p> <p>b) If covalent- label the partial charges over each bond with $\delta +$ or $\delta -$ in the molecule (or use the arrow $+->$)</p> <p>c) If ionic- use brackets to draw (see p. 15)</p>
CaS	<u>covalent</u> or ionic	$[Ca]^{2+} \quad [:\ddot{S}:]^{2-}$
SeBr ₂	<u>covalent</u> or ionic	
NCl ₃	<u>covalent</u> or ionic	<p>same electronegativity (3.0) so 100% nonpolar</p>

3. Are the **MOLECULES** polar, nonpolar, or ionic? (For molecular look above & can it be cut half with a positive side & negative side)

a. CaS Polar, Nonpolar, **Ionic** (circle one)

b. SeBr₂ **Polar,** Nonpolar, Ionic (circle one)

c. NCl₃ Polar, **Nonpolar,** Ionic (circle one)

4. What is the strongest intermolecular force in each molecule?

a. CaS Hydrogen bonding, Dipole-Dipole, London dispersion, **Ionic- no IMF** (circle one)

b. SeBr₂ Hydrogen bonding, Dipole-Dipole, London dispersion, Ionic- no IMF (circle one)

c. NF₃ Hydrogen bonding, Dipole-Dipole, London dispersion, Ionic- no IMF (circle one)

d. NCl₃ Hydrogen bonding, Dipole-Dipole, **London dispersion,** Ionic- no IMF (circle one)