

Chemistry Cycle Sheet

April 20, 2020 thru April 24, 2020



Goals: TLW develop an understanding of chemical bonding and the different types.

Monday: Class @1:00 – 2:15 PM
Molecular Geometry
Do Checkups #78 and 79

Homework: Do warm up #96

Tuesday: No meeting. Watch Videos

Homework: Do worksheet
“Metallic Bonding”

Wednesday: No Meeting. Watch Videos.

Homework: Do worksheet
“Molecular Geometry”

Thursday: Class @1:00 – 2:15 PM
Polar Molecules

Homework: Do warm up #98

Friday: No meeting. Watch Videos

Homework: Make up work

Vocabulary

halides	formula unit	electronegativity
diatomic	bonding electrons	coordinate covalent bond
lone pair	covalent bond	pure covalent bond
resonance	ionic bond	polar covalent bond
crystal	metallic bond	binary compound

Know the following

the general rules for chemical bonds
ionic and covalent bonds
the properties of ionic, covalent and metal substances
nonpolar and polar covalent bonds
the driving force behind chemical bonding
Lewis structural formulas
determine the possible bonds
predict the bond type
the 7 diatomic elements

Chemical Bond

It's an electrostatic attraction between two atoms strong enough to act as a unit.

Ionic Bond

A chemical bond created by the transfer of one or more electrons.

Covalent Bond

A chemical bond created by the sharing of one or more electrons.

Polar Bond

It's a covalent bond with a partial positive end and a partial negative end

Metallic Bond

This is a bond between atoms of a metal created by sharing free outer shell electrons.

Polar Molecule

This is a molecule with a partial positive end and a partial negative end

Dipole

A dipole is a polar covalent molecule.

Molecule

A molecule is the simplest form of a covalent compound.

Formula Unit

A formula unit is the simplest form of an ionic compound.

Coordinate Covalent Bond

It's a covalent bond in which both electrons come from the same atom.

Intermolecular Forces

Intermolecular forces (IMF's) refer to the attraction between the individual molecules or polyatomic ions of a substance.

Types:

Ion-Ion
Ion-Dipole

Van der Waals
hydrogen bonds
dipole-dipole
dispersion forces

Hybrid Orbitals

Hybridization is the mixing of a set of unequal orbitals on an atom to obtain a new set of equal orbitals.

"s" + "p" = 2 sp linear

"s" + 2 "p" = 3 sp² trigonal planar

"s" + 3 "p" = 4 sp³ tetrahedral

"s" + 3 "p" + "d" = 5 sp³d trigonal bi-pyramidal

"s" + 3 "p" + 2 "d" = 6 sp³d² octahedral

Molecular Orbitals (MO)

Molecular Orbitals are formed by the over-lapping of atomic orbitals from different atoms to create a molecule.

Sigma Bonds (σ)

A sigma bond is a molecular orbital created by the overlapping of atomic orbitals parallel to the plane.

Pi Bonds (π)

A pi bonds is a molecular orbital created by the overlapping of atomic orbitals perpendicular to the plane.

7 Diatomic Elements

hydrogen	H ₂	chlorine	Cl ₂
nitrogen	N ₂	bromine	Br ₂
oxygen	O ₂	iodine	I ₂
fluorine	F ₂		

Checkpoint #78

Determine the predominate bond in each of the following: (I)onic or (C)ovalent

- ____ 1. NaI ____ 2. CH₃Cl ____ 3. CO₂
____ 4. H₂O ____ 5. SrF₂ ____ 6. CsF
____ 7. MgCl₂ ____ 8. HCN ____ 9. LiBr

Checkpoint #79

Which of the following **DOES NOT** represent a stable ionic compound? (circle one)

1. MgCl₂; NaS; SrS 2. MgI; Al(OH)₃; K₂O
3. AlF₄; BaCl₂; NaBr

Write the symbol for a cation and an anion that is isoelectronic with Ar.

4. _____ 5. _____

Checkpoint #80

Determine the total number of valence electrons available in the following molecules.

- ____ 1. H₂S ____ 2. PCl₃ ____ 3. HCN

Checkpoint #81

Which atom in each of the following pairs has the larger electronegativity. (circle one)

1. C, H 2. As, Bi 3. Na, K
4. F, Br 5. I, O