

## Unit 4: Ch 9 – Molecular Geometry (MG)

### COVALENT BONDS:

- Bond STRENGTH: *Strongest* → *Weakest* : \_\_\_\_\_
- Bond LENGTH: *Shortest* → *Longest*: \_\_\_\_\_

### VSEPR Theory:

- Meaning: \_\_\_\_\_
- **DEFINITION** –
  - \_\_\_\_\_ as far as possible and gives \_\_\_\_\_ (geometry) to \_\_\_\_\_.
  - \_\_\_\_\_ (*unshared electrons*) also occupy \_\_\_\_\_ (*orbital*).
  - Lone pairs occupy \_\_\_\_\_ orbitals than \_\_\_\_\_ (*shared electrons*).
- **Bond Angle** –
- **Electron Pair Geometry** ( \_\_\_\_\_ ) – Arrangement \_\_\_\_\_ *lone pairs* on \_\_\_\_\_ atom.
- **Molecular Geometry** ( \_\_\_\_\_ ) – Arrangement \_\_\_\_\_ *lone pairs* on \_\_\_\_\_ atom.

### MOLECULAR GEOMETRY (MG) RULES:

- \_\_\_\_\_ and \_\_\_\_\_ determine the \_\_\_\_\_ and \_\_\_\_\_ properties.
  - Due to the \_\_\_\_\_ of *orbitals* that \_\_\_\_\_ electrons.
- Step #1: Draw the correct \_\_\_\_\_.
- Step #2: Count \_\_\_\_\_ number of \_\_\_\_\_ (*bonded and lone pairs*) around the \_\_\_\_\_ atom.
  - #2a: \_\_\_\_\_ bonds AND each \_\_\_\_\_ = \_\_\_\_\_ pair
  - #2b: \_\_\_\_\_ and \_\_\_\_\_ bonds = \_\_\_\_\_ pair

○ Step #3: Name \_\_\_\_\_ → \_\_\_\_\_ lone pairs.

○ Step #4: Name \_\_\_\_\_ → \_\_\_\_\_ lone pairs.

**A.B.E VSEPR Term in Molecular Geometry (MG):**



**PRACTICE EXAMPLES:**

1.  $CH_4$  → Total # val e- : \_\_\_\_\_ EPG: \_\_\_\_\_

Total # e- pairs: \_\_\_\_\_ MG: \_\_\_\_\_

# Bonded Pairs: \_\_\_\_\_ VSEPR Term: \_\_\_\_\_

# Lone Pairs: \_\_\_\_\_

2.  $SF_2$  → Total # val e- : \_\_\_\_\_ EPG: \_\_\_\_\_

Total # e- pairs: \_\_\_\_\_ MG: \_\_\_\_\_

# Bonded Pairs: \_\_\_\_\_ VSEPR Term: \_\_\_\_\_

# Lone Pairs: \_\_\_\_\_

3.  $XeO_3$  → Total # val e- : \_\_\_\_\_ EPG: \_\_\_\_\_

Total # e- pairs: \_\_\_\_\_ MG: \_\_\_\_\_

# Bonded Pairs: \_\_\_\_\_ VSEPR Term: \_\_\_\_\_

# Lone Pairs: \_\_\_\_\_