

**Bell Ringer #30:**

**Socrative Room Name:  
LEVEL70WARRIOR**

## **Covalent Bonds**

<http://drmoad.weebly.com/>

# Agenda

**Bell Ringer**  
**Quiz a Partner**  
**VSEPR Theory**  
**Exit Ticket**

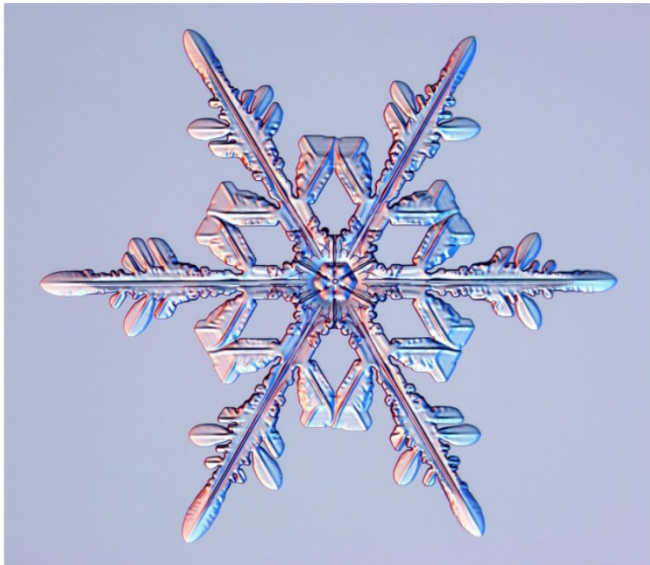
## **Polyatomic Ion Practice**

- **Get out your flashcard from last time.**
- **Find a partner.**
- **Quiz them on the 13 polyatomic ions.**
- **Report their score to Dr. Moad.**

## **Error Analysis Video**

## Structure-Function Relationships

- Structure-Function is a huge theme.
- Today we are going to discuss molecular structure.

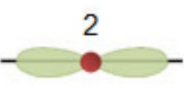

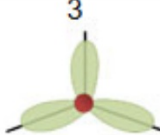



















**The structure of a snowflake is directly related to the structure of the water molecule.**

## VSEPR

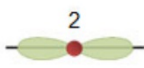

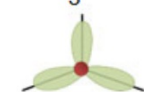
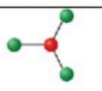
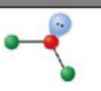

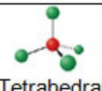
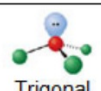
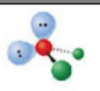
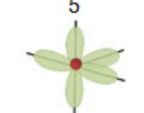




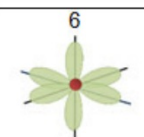
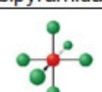
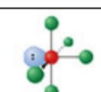
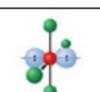
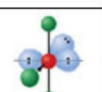
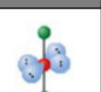
### valence shell electron pair repulsion

- Predicts the shape or geometry of a molecule.
- You need to know the lone pairs on the central atom.
- Lone pairs are the electrons “not shared” (not bonded).

Number of Electron Dense Areas	Electron-Pair Geometry	Molecular Geometry				
		No Lone Pairs	1 lone Pair	2 lone Pairs	3 lone Pairs	4 lone Pairs
2 	Linear	 Linear				
3 	Trigonal planar	 Trigonal planar	 Bent			
4 	Tetrahedral	 Tetrahedral	 Trigonal pyramidal	 Bent		
5 	Trigonal bipyramidal	 Trigonal bipyramidal	 Sawhorse	 T-shaped	 Linear	
6 	Octahedral	 Octahedral	 Square pyramidal	 Square planar	 T-shaped	 Linear

## Examples:

- Try a google image search for: *VSEPR* or *molecular geometry*.
- Look for real molecules that belong in the following categories.

Number of Electron Dense Areas	Electron-Pair Geometry	Molecular Geometry				
		No Lone Pairs	1 lone Pair	2 lone Pairs	3 lone Pairs	4 lone Pairs
2 	Linear	 Linear				
3 	Trigonal planar	 Trigonal planar	 Bent			
4 	Tetrahedral	 Tetrahedral	 Trigonal pyramidal	 Bent		
5 	Trigonal bipyramidal	 Trigonal bipyramidal	 Sawhorse	 T-shaped	 Linear	
6 	Octahedral	 Octahedral	 Square pyramidal	 Square planar	 T-shaped	 Linear



## What examples did we find?

linear  
no lone pairs



trigonal  
planar



Bent,  
trigonal planar



tetrahedral



tetrahedral  
trigonal  
pyramid

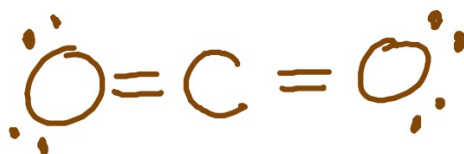


tetrahedral  
bent

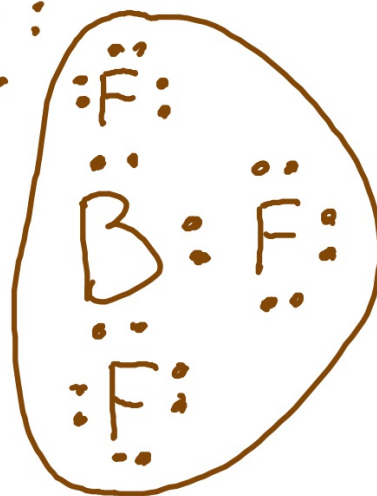
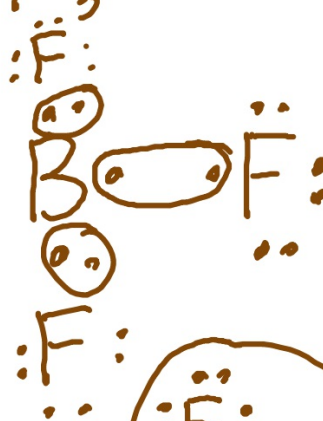


What do the Lewis dot structures look like?

CO<sub>2</sub>



BF<sub>3</sub>



What do the Lewis dot structures look like?



## Practice: Draw the Lewis Structure

**NFIBr**

**SIF**

## Practice: Draw the Lewis Structure



shape?

shape?

## Naming Molecular Compounds Homework

1.  $\text{CO}_2$
2.  $\text{CO}$
3.  $\text{SO}_2$
4.  $\text{SO}_3$
5.  $\text{N}_2\text{O}$
6.  $\text{NO}$
7.  $\text{N}_2\text{O}_3$
8.  $\text{NO}_2$
9.  $\text{N}_2\text{O}_4$
10.  $\text{N}_2\text{O}_5$

## Naming Molecular Compounds Homework

11.  $\text{PCl}_3$

12.  $\text{PCl}_5$

13.  $\text{NH}_3$

14.  $\text{SCl}_6$

15.  $\text{P}_2\text{O}_5$

16.  $\text{CCl}_4$

17.  $\text{SiO}_2$

18.  $\text{CS}_2$

19.  $\text{OF}_2$



## **Polarity**

### **Ionic**

- electronegativity greater than 1.7

### **Polar**

- Do not share electrons equally.
- Electronegativity difference of 1.7 -.31

### **Non-Polar**

- Share electrons equally.
- Electronegativity difference of .3 -0

**Are the following bonds polar or non-polar?**

**Nitrogen to Fluorine**

**Carbon to Sulfur**

## Naming Acids

**Acids have an H 1<sup>st</sup> in their formula.**

### Acids made from polyatomic ions.

- The charge from the polyatomic ion determines how many hydrogens.
- ate = ic (I ate something icky)  
ite = ous

Example: HNO<sub>3</sub>  
HNO<sub>2</sub>

### Acids made from anions.

- The charge of the element determines how many hydrogens.
- hydro \_\_\_\_\_ ic  
(hydro means no O)

Example: HCl  
H<sub>3</sub>N

**Exit Ticket #29:**

**Socratic Room Name:  
LEVEL70WARRIOR**

**Covalent Compounds**