

Name: _____

Date: _____

Question 1 & 2: Complete the following table for each combination of ions. The first one has been completed for reference:

Cation:	Anion:	Cation Charge	Anion Charge	Combination Ratio (cation:anion)	Compound:
Sodium	Chromate	+1	-2	2:1	Na ₂ CrO ₄
Magnesium	Fluoride				
Ammonium	Cyanide				
Platinum (IV)	Oxide				
Lithium	Phosphate				
Aluminum	Carbonate				

Question 3 & 4: Name each molecule & draw a Lewis Structure which *satisfies the octet rule*. Then determine the shape around the central atom.

Molecule:	CBr ₄	SiS ₂	SO ₂
Name:			
Lewis Structure:			
Shape: (circle your answer)	Bent Linear Tetrahedral Trigonal Planar Trigonal Pyramidal	Bent Linear Tetrahedral Trigonal Planar Trigonal Pyramidal	Bent Linear Tetrahedral Trigonal Planar Trigonal Pyramidal

Question 5-9: Consider each structure & identify any polar bonds. Then determine if the molecule is polar or nonpolar. The first one has been completed for reference:

Molecule:	List any polar <i>bonds</i> :	Is the <i>molecule</i> polar or nonpolar?
Example: HCl $\begin{array}{c} \text{+} \quad \text{---} \\ \text{H} - \overset{\cdot\cdot}{\underset{\cdot\cdot}{\text{Cl}}} \end{array}$	H-Cl	1 polar bond = net dipole The molecule is polar
N ₂ $:\text{N} \equiv \text{N}:$		
HCN $\text{H} - \text{C} \equiv \text{N}:$		
HBCl ₂ $\begin{array}{c} \cdot\cdot \\ \text{Cl} \\ \cdot\cdot \\ \\ \text{H} - \text{B} - \text{Cl} \\ \cdot\cdot \quad \cdot\cdot \\ \cdot\cdot \quad \cdot\cdot \end{array}$		
SO ₃ $\begin{array}{c} \cdot\cdot \\ \text{O} \\ \cdot\cdot \\ \\ \cdot\cdot \text{O} = \text{S} = \text{O} \cdot\cdot \\ \cdot\cdot \quad \cdot\cdot \end{array}$ (For reasons not discussed in this class, sulfur can exceed the octet)		
CH ₃ OH, methanol $\begin{array}{c} \text{H} \\ \\ \text{H} - \text{C} - \text{O} \cdot\cdot \\ \quad \cdot\cdot \\ \text{H} \quad \text{H} \end{array}$		