

Mole, Bonding, Naming & Polarity Practice

Name: _____ Block: _____

Part I: Solve each problem. Clearly show all your work. Round answers to the correct number of significant figures and include appropriate units.

1. How many moles of SO_2 are in 2.12 grams of SO_2 ?

2. How many grams of C_2H_6 are in 5.02 moles of C_2H_6 ?

3. How many particles of NO_2 gas are in 41.9 grams of NO_2 gas?

4. How many particles of potassium oxide are in 2.0 moles of K_2O ?

5. How many grams of lithium bromide are in 8.04×10^{24} particles of LiBr_2 ?

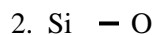
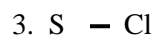
6. How many grams of dinitrogen tetroxide gas are in 4.3×10^{26} molecules of dinitrogen tetroxide gas?

7. How many particles of calcium hydroxide are in 3.99 grams of calcium hydroxide?

Part II: Draw the Lewis Dot Structure & Shape of each molecule below. (See notes for help).

	Lewis Structure	# bonding e ⁻ conc.	# lone e ⁻ pairs	Total e ⁻ conc.	Picture of Shape (molecular geometry)	Shape Name
1.	O ₂					
2.	N ₂					
3.	SiS ₂					
4.	CClBr ₃					
5.	OI ₂					
6.	BI ₃ (boron is an exception: only needs 6 valence e ⁻)					
7.	NI ₃					

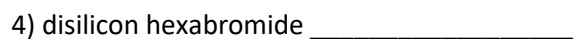
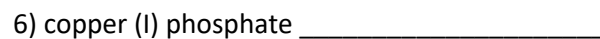
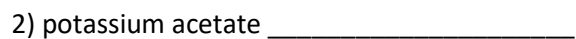
Part III: Determine the electronegativity difference (ΔEN) (use your yellow tables) between the two atoms and predict the type of bond that will form (ionic, polar covalent, or nonpolar covalent).



Part IV: First determine the type of bond, then write the names of the following chemical compounds:

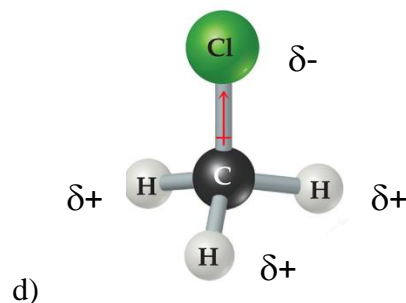
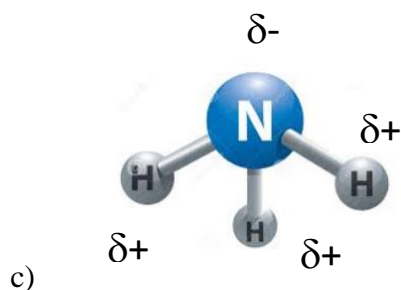
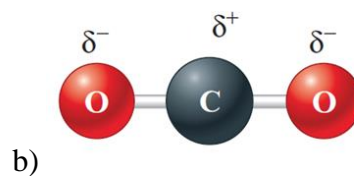
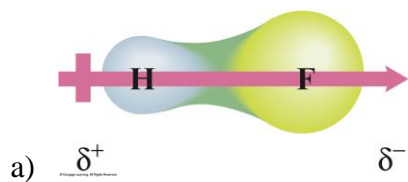


Part V: Determine the type of bond, then write the formulas of the following chemical compounds:

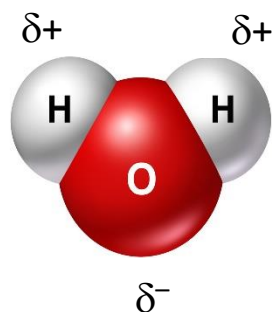


Part VI: Molecular Polarity and Solubility

1. Determine whether each molecule is **polar or nonpolar**.



2. Examine the water molecule below. Determine whether water is polar or nonpolar. Explain your reasoning.



3. Determine whether each molecule is **polar or nonpolar**. Then circle **ALL** molecules that would be soluble (i.e. dissolve) in water.

