

Name _____

Lewis Structures and Molecular Shape

Use the stepwise procedure that you learned in class to predict the shape around the underlined atom in each of these molecules. From the shape determine if the molecule is polar and the strongest intermolecular force that the molecule can undergo.

Compound	Lewis structure	Electron geometry at underlined atom	Molecular shape at underlined atom	Are polar bonds present?	Is the molecule polar?	Strongest intermolecular force? (circle one)
$\text{H}_2\underline{\text{S}}$	$\text{H}-\ddot{\text{S}}-\text{H}$	tetrahedral	bent	yes	yes	Dispersion
						Dipole-dipole
						H-bonding
$\underline{\text{C}}\text{H}_2\text{Cl}_2$	$ \begin{array}{c} \text{H} \\ \\ \text{:}\ddot{\text{Cl}}-\text{C}-\ddot{\text{Cl}}\text{:} \\ \\ \text{H} \end{array} $	Tetrahedral	Tetrahedral	Yes	Yes	Dispersion Dipole-dipole H-bonding
$\text{N}\underline{\text{N}}\text{O}$ (Formulas is N_2O , but N is in the middle)	$ \begin{array}{c} \text{:N}\equiv\text{N}-\ddot{\text{O}}\text{:} \\ \text{or} \\ \ddot{\text{N}}=\text{N}=\ddot{\text{O}} \end{array} $	Linear	Linear	Yes	Yes	Dispersion Dipole-dipole H-bonding

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H ₂ <u>C</u> O	$ \begin{array}{c} \text{:O:} \\ \\ \text{H}-\text{C}-\text{H} \end{array} $	Triangular or Trigonal or Trigonal Planar	Triangular or Trigonal or Trigonal Planar	Yes	Yes	Dispersion Dipole-dipole H-bonding
<u>P</u> H ₃	$ \begin{array}{c} \text{H} \\ \\ \text{H}-\text{P}: \\ \\ \text{H} \end{array} $	Tetrahedral	Pyramidal	Yes	Yes	Dispersion Dipole-dipole H-bonding
H <u>C</u> N	$ \text{H}-\text{C}\equiv\text{N:} $	Linear	Linear	Yes	Yes	Dispersion Dipole-dipole H-bonding
H ₂ <u>O</u>	$ \text{H}-\ddot{\text{O}}-\text{H} $	Tetrahedral	Bent	Yes	Yes	Dispersion Dipole-dipole H-bonding