

**EXTRA PRACTICE: Molecular Polarity**

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**ANSWER KEY**

Formula	Lewis Structure	Molecular Geometry (MG) on the Central Atom	Molecular Polarity (Polar, Non-Polar, Ion)	Reasoning for Polarity
Br <sub>2</sub>		Linear	Non-Polar	Identical $\Delta EN = 0$
H <sub>2</sub> O		Bent	Polar	Lone pair on central atom
CH <sub>4</sub>		Tetrahedral	Non-Polar	-Symmetrical -Same terminal -No lone pairs
NH <sub>3</sub>		Trigonal Pyramidal	Polar	Lone pair on central atom
HF		Linear	Polar	Different Terminal Atom

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C <sub>2</sub> H <sub>2</sub>		Linear	Polar	Different Terminal Atoms
CH <sub>2</sub> Cl <sub>2</sub>		Tetrahedral	Polar	-Different Terminal Atoms -Asymmetrical
N <sub>2</sub>		Linear	Non-Polar	Identical $\Delta EN = 0$
CH <sub>3</sub> OH		$\hookrightarrow$ Tetrahedral $\circ \rightarrow$ Bent	Polar	Different Terminal Atoms
H <sub>2</sub> S		Bent	Polar	Lone pair on central atom

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PCl <sub>3</sub>	$\begin{array}{c} \text{:}\ddot{\text{Cl}}\text{--}\ddot{\text{P}}\text{--}\ddot{\text{Cl}}\text{:} \\   \\ \text{:}\ddot{\text{Cl}}\text{:} \end{array}$	Trigonal Pyramidal	Polar	Lone pair on Central Atom
CO <sub>2</sub>	$\text{:}\ddot{\text{O}}\text{=C=}\ddot{\text{O}}\text{:}$	Linear	Non-Polar	-Symmetrical -No lone pairs
CBr <sub>4</sub>	$\begin{array}{c} \text{:}\ddot{\text{Br}}\text{:} \\   \\ \text{:}\ddot{\text{Br}}\text{--C--}\ddot{\text{Br}}\text{:} \\   \\ \text{:}\ddot{\text{Br}}\text{:} \end{array}$	Tetrahedral	Non-Polar	-Symmetrical -No lone pairs
O <sub>2</sub> <sup>2-</sup>	$\left[ \text{:}\ddot{\text{O}}\text{=}\ddot{\text{O}}\text{:} \right]^{2-}$	Linear	Ion	overall net charge (2-)
IO <sub>3</sub> <sup>1-</sup>	$\left[ \begin{array}{c} \text{:}\ddot{\text{O}}\text{--}\ddot{\text{I}}\text{--}\ddot{\text{O}}\text{:} \\   \\ \text{:}\ddot{\text{O}}\text{:} \end{array} \right]^{-}$	Trigonal Pyramidal	Ion	overall net charge (1-)

Formula	Lewis Structure	Molecular Geometry (MG) on the Central Atom	Molecular Polarity (Polar, Non-Polar, Ion)	Reasoning for Polarity
N <sub>2</sub> O	$\text{:}\ddot{\text{N}}\text{=O=}\ddot{\text{N}}\text{:}$	Linear	Non-Polar	-Symmetrical -No lone pairs
NC <sub>3</sub> <sup>1-</sup>	$\left[ \text{:}\ddot{\text{N}}\text{=C=}\ddot{\text{O}}\text{:} \right]^{-}$	Linear	Ion	Overall net charge (1-)
XeF <sub>4</sub>	$\begin{array}{c} \text{:}\ddot{\text{F}}\text{:} \\   \\ \text{:}\ddot{\text{F}}\text{--Xe--}\ddot{\text{F}}\text{:} \\   \\ \text{:}\ddot{\text{F}}\text{:} \end{array}$	Tetrahedral	Non-Polar	-Symmetrical -No lone pairs
ClF <sub>3</sub>	$\begin{array}{c} \text{:}\ddot{\text{F}}\text{--}\ddot{\text{Cl}}\text{--}\ddot{\text{F}}\text{:} \\   \\ \text{:}\ddot{\text{F}}\text{:} \end{array}$	T-shaped	Polar	-Lone Pairs on central atom
SO <sub>2</sub>	$\begin{array}{c} \text{:}\ddot{\text{O}}\text{--}\ddot{\text{S}}\text{=}\ddot{\text{O}} \\ \updownarrow \\ \text{:}\ddot{\text{O}}\text{=}\ddot{\text{S}}\text{--}\ddot{\text{O}}\text{:} \end{array}$	Linear	Polar	Lone Pairs on central Atom