

## Polarity Practice Worksheet

For each of the following pairs of compounds, determine which is most polar based on their Lewis structures.

- 1) methyl chloride ( $\text{CHCl}_3$ ) or methyl bromide ( $\text{CHBr}_3$ )
- 2) water or hydrogen sulfide ( $\text{H}_2\text{S}$ )
- 3) hydrochloric acid ( $\text{HCl}$ ) or hydroiodic acid ( $\text{HI}$ )
- 4) bromoacetylene ( $\text{C}_2\text{HBr}$ ) or chloroacetylene ( $\text{C}_2\text{HCl}$ )
- 5) methanol ( $\text{CH}_3\text{OH}$ ) or diethyl ether [ $(\text{CH}_3)_2\text{O}$ ]
- 6) acetone [ $(\text{CH}_3)_2\text{CO}$ ] or propanol ( $\text{C}_3\text{H}_8\text{O}$ )

# Polarity Practice Worksheet - Solutions

For each of the following pairs of compounds, determine which is most polar based on their Lewis structures.

- 1) **methyl chloride (CHCl<sub>3</sub>)** or methyl bromide (CHBr<sub>3</sub>)

*Since chlorine is more electronegative than bromine, the molecule has a higher polarity.*

- 2) **water** or hydrogen sulfide (H<sub>2</sub>S)

*Since oxygen is more electronegative than sulfur, the molecule has a higher polarity.*

- 3) **hydrochloric acid (HCl)** or hydroiodic acid (HI)

*Chlorine is more electronegative than iodine, making HCl more polar.*

- 4) bromoacetylene (C<sub>2</sub>HBr) or **chloroacetylene (C<sub>2</sub>HCl)**

*Chlorine is more electronegative than bromine, making chloroacetylene more polar.*

- 5) **methanol (CH<sub>3</sub>OH)** or diethyl ether [(CH<sub>3</sub>)<sub>2</sub>O]

*Since diethyl ether has the oxygen at the middle of the molecule rather than on the end, it is far less polar than methanol.*

- 6) **acetone [(CH<sub>3</sub>)<sub>2</sub>CO]** or propanol (C<sub>3</sub>H<sub>8</sub>O)

*A quick look at the Lewis structures of this molecule should convince you that acetone is far more polar, as the molecule appears more unbalanced.*