

Worksheet: Bond Polarity, Molecular Polarity

Key

1. Identify the types of bonds in the following compounds:

a. Na—Cl	<u>ionic</u>	e. N—N	<u>nonpolar cov.</u>
b. Cl—As	<u>polar cov.</u>	f. Li—O	<u>ionic</u>
c. C—S	<u>nonpolar cov.</u>	g. C—O	<u>polar cov.</u>
d. O—K	<u>ionic</u>	h. P—Br	<u>polar cov.</u>

2. Explain the difference between nonpolar and polar covalent bonds.

Nonpolar: e^- shared equally

Polar: e^- shared unequally, favor atom w / higher EN value

3. Identify the following compounds as polar or nonpolar:

a. H ₂ O	<u>polar</u>	e. SiCl ₄	<u>nonpolar</u>
b. Cl ₂	<u>nonpolar</u>	f. O ₂	<u>nonpolar</u>
c. NF ₃	<u>non polar</u>	g. CH ₄	<u>nonpolar</u>
d. CS ₂	<u>nonpolar</u>	h. HCl	<u>polar</u>

4. Explain why a molecule can have polar bonds but can be nonpolar overall.

In 3D space, all dipoles cancel for overall net dipole of zero, $\therefore$ nonpolar