

Student directions *Molecule Polarity* activity

Learning Goals: Students will be able to:

- Define bond polarity and molecular polarity
- Explain the relationships between bond polarity and molecular polarity
- Identify tools/representations to approximate bond and molecular polarity
 - Use these common tools to approximate and compare polarity
- Use standard notation to indicate polarity
- Identify the bonds between atoms as nonpolar covalent, moderately polar covalent, very polar covalent, or ionic.

Directions:

1. Explore *Molecular Polarity*, and then explain
 - a. What does the “Bond Dipole” show about a molecule? What tools did you use or what changes did you make to decide?
 - b. What does the “Molecular Dipole” show about a molecule? Give evidence to support your thinking including example diagrams of molecules that you used to decide.
2. Identify the bond between atoms of each pair as non-polar covalent, moderately polar covalent, very polar covalent, or ionic. Verify or correct your answers using the sim.
 - a. H and O b. Cl and Br c. Na and F d. N and N e. Na and S
3. Place the following bonds in order from least polar to most polar. (Remember you can look up the Electronegativity in your text or online)Verify or correct your answers using the sim.
 - a. H-Cl b. H-Br c. H-S d. H-C
4. In the pictures on the right, the bond dipoles are shown. Predict the molecular polarity to be for these molecules. Show pictures to justify your answer. Then use the sim to verify or correct your answer.
5. Explain using pictures and explanations, what affects molecular polarity. Make sure to include things you could use on a test to help you.
6. For each molecule pair, draw Lewis Dot Diagram, the Structural Formula, the Bond Polarities and Molecular Polarity. Also, name the Electron Geometry and Molecular Geometry, (Remember you can look up the Electronegativity in your text or online)
 - a. HF and ClF
 - b. H₂O and H₂S
 - c. CH₄ and CF₄
 - d. CO₂ and HCN (C is the central atom)
 - e. NH₃ and BH₃