# Geometry, Polarity, and Intermolecular Interactions

g11_u07_w26

**Purpose and boundary**

Use original fictional structure cards and property tables only. No substances, materials, instruments, synthesis, or safety/consumer determination is requested.

**Targets:** I can use a stated geometry model to compare dipoles and interactions while naming alternative explanations. **Vocabulary:** electron domain, molecular geometry, dipole, symmetry, dispersion, hydrogen bonding. **Prerequisites:** VSEPR, electronegativity trend, polarity, intermolecular forces.

For items 4–12 use fictional structure cards with stated electron-domain models. Treat every drawing as a simplified representation.

1. Distinguish electron-domain geometry from molecular geometry.

2. Why can a molecule with polar bonds have zero net dipole in a symmetric model?

3. State a limitation of using a flat drawing to infer three-dimensional geometry.

4. Card A has four bonding domains and no lone pairs around its center. Name the stated geometry model.

5. Card B has four domains, three bonding domains, and one lone pair. Name the stated molecular geometry model.

6. Compare how a lone pair can affect a stated bond-angle model.

7. Card C has two identical polar bonds arranged linearly. Predict the net-dipole model tendency.

8. Card D has two identical polar bonds arranged bent. Predict the net-dipole model tendency.

9. Explain why items 7–8 differ despite identical bond types.

10. State one supported and one unsupported claim from a net-dipole model.

11. A fictional table lists interaction labels: E has dispersion only; F has dispersion plus dipole-dipole; G has dispersion, dipole-dipole, and hydrogen bonding. Rank the expected interaction-model complexity.

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12. Why does the table not determine an exact boiling point?

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13. Cards H and I have equal molar mass; H has a stated net dipole while I has none. Name one model-based property trend that could differ and one missing factor.

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14. A student says hydrogen bonding is a chemical bond within every molecule. Correct the statement.

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15. Explain why dispersion forces can matter for nonpolar cards.

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16. Identify one structural feature that could change a property comparison besides polarity.

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17. A fictional property table disagrees with a simple polarity prediction. State a productive next question.

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18. Why is a property table not proof of an exact microscopic mechanism?

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19. Write a bounded claim connecting a stated geometry card to an interaction-model prediction.

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20. Write a two-sentence evidence conclusion that names one alternative explanation.

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