

VSEPR Shapes and Polarity

Student Worksheet | g09_u06_w23

I can: use VSEPR to predict simple shapes, distinguish bond from molecular polarity, and state model limits.

Vocabulary: VSEPR, electron domain, linear, bent, trigonal pyramidal, tetrahedral, polar bond, molecular polarity.

1. What does VSEPR model predict?

2. Define electron domain.

3. Predict shape of CO_2 .

4. Predict shape of CH_4 .

5. Predict shape of H_2O .

6. Predict shape of NH_3 .

7. Why do lone pairs affect shape?

8. Is a C–O bond polar?

9. Is CO_2 molecule polar? Explain symmetry.

10. Is H_2O molecule polar? Explain shape.

11. Distinguish bond polarity from molecular polarity.

12. Count electron domains around C in CH_4 .

13. Count electron domains around O in H_2O .

14. Draw a Lewis-to-shape pathway for NH_3 .

15. Why do VSEPR drawings not show exact bond angles?

16. What does a dipole arrow model simplify?

17. Compare BF_3 and NH_3 molecular polarity with shape reasoning.

18. A molecule has two polar bonds opposite each other. Predict molecular polarity with caveat.

19. Correct claim: "all molecules with polar bonds are polar."

20. Critique: "VSEPR tells every property of a molecule."
