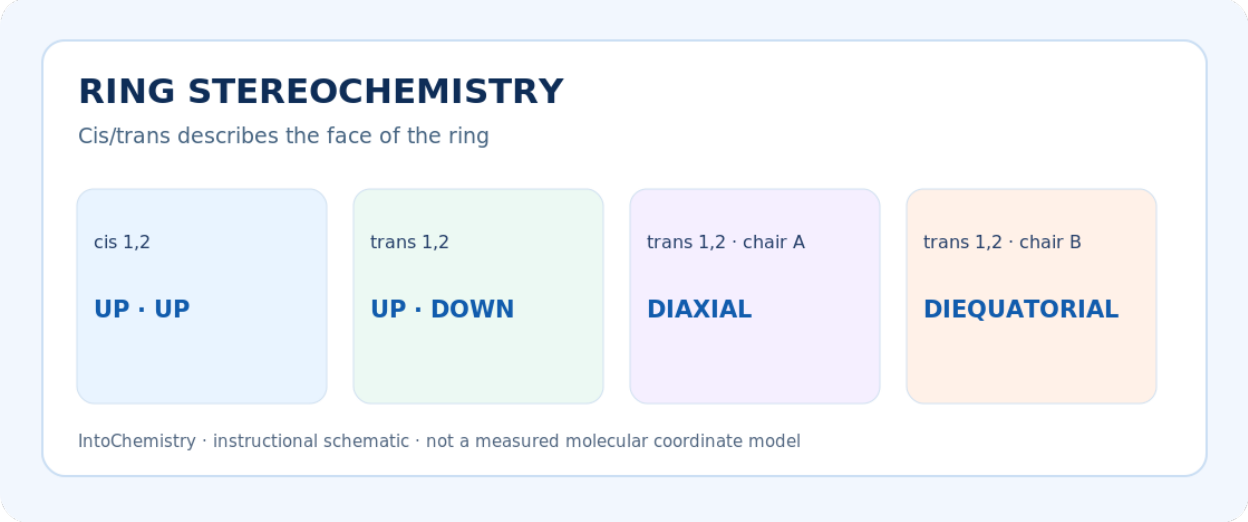
Cis/Trans Disubstituted Cyclohexanes — Practice Worksheet

Name: _____ **Date:** _____

Skills: Distinguish cis/trans from axial/equatorial positions for 1,2-, 1,3- and 1,4-disubstituted rings.



Directions: Answer every question. Include a quick labeled sketch or your reasoning when asked. Show chair positions and up/down directions separately.

1. C1 substituent is up; C2 substituent is up. Chair A uses axial-up at odd-numbered carbons and axial-down at even-numbered carbons. Which arrangement describes chair A?

2. C1 substituent is up; C2 substituent is down. Chair A uses axial-up at odd-numbered carbons and axial-down at even-numbered carbons. Which arrangement describes chair A?

3. C1 substituent is up; C3 substituent is up. Chair A uses axial-up at odd-numbered carbons and axial-down at even-numbered carbons. Which arrangement describes chair A?

4. C1 substituent is up; C3 substituent is down. Chair A uses axial-up at odd-numbered carbons and axial-down at even-numbered carbons. Which arrangement describes chair A?

5. C1 substituent is up; C4 substituent is up. Chair A uses axial-up at odd-numbered carbons and axial-down at even-numbered carbons. Which arrangement describes chair A?

6. C1 substituent is up; C4 substituent is down. Chair A uses axial-up at odd-numbered carbons and axial-down at even-numbered carbons. Which arrangement describes chair A?

7. Can cis-1,4-dimethylcyclohexane be diequatorial? Explain.

8. Which isomer of 1,3-dimethylcyclohexane can be diequatorial?