

Grade 11 Chemistry Start Diagnostic

Representation, quantities, and model readiness

This internal diagnostic guides instruction; it is not a grade, placement, proficiency, or release claim. All cards are fictional paper models. A calculator is optional.

Name: _____ **Date:** _____ **Directions.** Select the best answer where choices are given. Show units and reasoning. Eight items total 16 points.

1. A molecular card labels an alcohol group -OH . Which conclusion is supported? [1 pts]

A. A structural feature is present.
B. The complete identity is proved.
C. A reaction pathway is proved.
D. A product is safe.

2. Using $C = 12.01$ and $H = 1.008$ g/mol, calculate the molar mass of C_2H_6 . [2 pts]

3. A fictional card has 0.25 mol of molecules. Calculate the number of molecules using $6.02 \times 10^{23} \text{ mol}^{-1}$. [2 pts]

4. A model labels two carbon atoms connected by a double bond. State one structural feature this represents and one thing it does not prove. [2 pts]

5. A fictional rate table changes only labeled concentration from 0.10 to 0.20 units while the stated response changes from 3.0 to 6.0 units. State the response factor and one bounded conclusion. [2 pts]

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6. A particle model shows a solute surrounded by polar solvent icons. What interaction idea could the model represent, and what limitation should remain? [2 pts]
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7. A fictional source says its observed pattern proves a mechanism. Identify two missing evidence types or limits. [2 pts]
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8. Write a two-sentence claim-evidence-reasoning response using the rate table. Include one uncertainty or boundary. [3 pts]
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