

Competition Corner: Model Boundaries

g10_u05_w17

Classify only from supplied equation/model evidence; separate model, concentration, strength, and rate claims.

1. For $\text{HSO}_4^- + \text{H}_2\text{O} \rightleftharpoons \text{SO}_4^{2-} + \text{H}_3\text{O}^+$, identify donor, acceptor, and conjugate pairs.
2. A student says an acid with a larger concentration must be stronger. Construct a counterexample in words using concentration and ionization as separate ideas.
3. Explain why an Arrhenius classification can be useful for an aqueous acid yet incomplete for a gas-phase proton-transfer equation.
4. Critique: "A Brønsted–Lowry base always contains hydroxide." Replace it with an equation-supported statement.
5. Design a two-question evidence checklist before labeling a reaction acid–base.