

Grade 9 Performance Task

Argument from evidence: a fictional density card set

This is a paper-only reasoning task. The dataset is fictional and bounded to the cards below. Do not collect personal data, handle substances, or conduct a laboratory procedure. Show units and distinguish what the data support from what they do not establish. Total: 16 points.

Scenario. A fictional archive contains a reference material, R, and two anonymous samples, A and B. Each card reports a mass and a displaced volume. The archive asks which anonymous sample is most consistent with R. All entries are simulated measurements; the cards do not identify chemical composition.

Card	Mass (g)	Displaced volume (mL)
Reference R	13.50	5.00
Sample A, trial 1	10.80	4.00
Sample A, trial 2	16.20	6.00
Sample B, trial 1	11.50	4.00
Sample B, trial 2	17.25	6.00

1. Calculate the density for each A and B trial. Then state the numerical pattern you see for each sample. Include units. [4 pts]

2. Write a bounded claim identifying which sample, if either, is most consistent with R. Cite at least two numerical pieces of evidence and state one limitation of the claim. [5 pts]

3. Use a particle-model explanation: state one thing this density comparison can support about the samples and one thing it cannot establish about their particles or composition. [3 pts]

Item 4 - Paper-card experimental design

4. Design a **paper-card follow-up** that could strengthen or weaken your claim. Name an independent variable, a dependent variable, two controls, a repeat plan, and a numerical decision rule. No substances or real testing are authorized. [4 pts]
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