Chemical vs Physical Changes

SNC2D | Student laboratory assignment | 1 of 4

Prepare for your investigation

Name: _____ Date: _____ Class: _____

Research question

How can observations and knowledge of substances be used to distinguish chemical from physical changes?

Learning goal: use the virtual model to gather evidence, explain chemical vs physical changes and communicate a supported conclusion.

Materials: WorksheetGalaxy virtual laboratory, this assignment, calculator or spreadsheet if needed. Virtual observations only; do not recreate hazardous procedures or perform physical fitness tests without teacher approval.

1. Define two relevant scientific terms from the Background Information tab. (K/U)

2. Write a prediction or hypothesis with a scientific reason. (K/U, T/I)

3. Identify the variable or feature compared, the measured outcome and constants or consistent observation criteria. (T/I)

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Perform the virtual laboratory

Open the corresponding virtual lab and read Background Information. Follow the investigation instructions below. Record authentic simulated results; do not invent data.

- Review the background and make a prediction for each scenario.
- Complete at least eight different simulated experiments.
- For each trial, choose a classification and a predicted observation before running the simulation.
- Record the results, review the evidence, and correct misconceptions.
- Use the Data & Graphs tab to compare accuracy and change types.
- Complete the lab report, including one example where an observation alone could be misleading.
- Distinguish substance identity from physical appearance.
- Describe evidence and explain its limitations.

Use observations to justify a classification.

- Explain conservation of matter in a gas-producing reaction.

Record each completed observation using the simulator’s record control when available. Use Data & Graphs to review results. Export CSV if available; attach additional rows or screenshots when needed.

Record the exact settings and any changes to the method.

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Observations & results

Enter the actual results. Keep trial IDs consistent between continued tables. Attach the full exported data or extra sheets when the procedure requires more rows. Include units as displayed.

Data table 1

Trial / item	Scenario	Prediction	Actual	Correct?	Predicted observation

Data table 1 — continued (2)

Trial / item	Actual observation

Qualitative observations / sample calculation (show units where applicable)

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Analysis, conclusion & assessment

4. Present a labelled graph of a measured relationship, or an annotated diagram / comparison chart for qualitative investigations. Attach it separately. Explain the pattern using recorded evidence. (C, T/I)

5. Identify the independent, dependent and controlled variables in your classification investigation. (K/U, A)

6. Describe two physical changes and explain why no new substances are formed. (K/U, A)

7. Describe two chemical changes and identify evidence of new substances. (K/U, A)

8. Explain why bubbles do not always prove a chemical reaction. Compare boiling water with vinegar and baking soda. (K/U, A)

Conclusion and evaluation: answer the research question, revisit the prediction using evidence, identify a model limitation and propose an improvement. (T/I, A)

Submit this assignment plus your completed Lab Report (printed or saved as PDF from the lab) and any supporting data/figures.

K/U: accurate concepts /10	T/I: method, data, reasoning /12	C: clear tables, units, report /8	A: explanation, conclusion, transfer /10

Total: /40