Chemical Reactions & Conservation of Mass

SNC1W | Student laboratory assignment | 1 of 4

Prepare for your investigation

Name: _____ Date: _____ Class: _____

Research question

How can observations from this virtual investigation explain chemical reactions & conservation of mass?

Learning goal: use the virtual model to gather evidence, explain chemical reactions & conservation of mass 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.

• Choose hydrogen and oxygen forming water. Predict the smallest whole-number coefficients.

• Adjust coefficients and use Check balance until the atom counts match on both sides.

• Choose a reactant mass (10–100 g). Record the calculated total product mass in a closed system.

• Repeat with at least three different reactant masses, changing only the mass.

• Try two additional reactions, including one that produces a gas.

• Compare the open-container illustration with the closed-system result, and explain any apparent mass loss.

• Complete the lab report and cite trial numbers and units.

• Safety: This is a computer simulation only. Do not perform combustion, magnesium burning or thermal decomposition without approved equipment and direct teacher supervision.

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	Reaction	Balanced equation	Reactants (g)	Products (g)	Remaining (g)

Data table 1 — continued (2)

Trial / item	Escaped (g)	System	Action

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 reactants and products in two selected reactions. (K/U, A)

6. Explain why a balanced chemical equation is required to conserve atoms. (K/U, A)

7. Record at least four trials and compare reactant and product mass in a closed system. (K/U, A)

8. Describe what might happen to the measured mass in an open container if a gas escapes. (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