Static Electricity & Charging

SNC1W | Student laboratory assignment | 1 of 4

Prepare for your investigation

Name: _____ Date: _____ Class: _____

Research question

How can observations from this virtual investigation explain static electricity & charging?

Learning goal: use the virtual model to gather evidence, explain static electricity & charging 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.

• Predict the sign of charge after frictional transfer and explain which object gains electrons.

• Test two charged objects with equal and opposite signs, then two with the same sign. Record the interaction.

• Investigate contact charging of two identical conducting spheres. Explain the resulting charge distribution.

• Compare induction with and without grounding. Explain why a neutral sphere returns to neutral after an ungrounded charged rod is removed.

• Investigate the influence of separation distance on the qualitative interaction score, holding charges constant.

• Complete at least six trials, export the data and write a conclusion that distinguishes charging from polarization.

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	Mode	Initial A / B	Final A / B	Distance	Interaction

Data table 1 — continued (2)

Trial / item	Force score

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. Explain electron transfer during frictional charging. (K/U, A)

6. Explain charge redistribution by conduction. (K/U, A)

7. Compare induction with and without grounding. (K/U, A)

8. Explain attraction, repulsion and the role of distance. (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