Nutritional Smoothie & Nutrient Analysis

PSK4U | Student laboratory assignment | 1 of 4

Prepare for your investigation

Name: _____ Date: _____ Class: _____

Research question

How does changing smoothie ingredients alter estimated macronutrient composition and suitability for a chosen physical activity context?

Learning goal: use the virtual model to gather evidence, explain nutritional smoothie & nutrient analysis 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 a purpose: general snack, pre-activity snack, or post-activity recovery snack.

• Create a baseline smoothie with at least three ingredients. Record quantities and predicted nutrient contributions.

Save the baseline recipe as Trial 1.

• Change one ingredient or its quantity while keeping other conditions constant. Save Trial 2.

• Develop a third recipe intended for a different activity context and save Trial 3.

• Compare total energy, carbohydrates, protein, fat, fibre, and estimated volume. Explain trade-offs and limitations.

• Complete the lab report with a claim supported by your recorded evidence.

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	Recipe	Context	Energy (kcal)	Carbs (g)	Protein (g)

Data table 1 — continued (2)

Trial / item	Fat (g)	Fibre (g)	Volume (mL)	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. Analysis: compare recipes and explain trade-offs for activity contexts (K/U, A)

6. Compare two contrasting observations from your investigation of Nutritional Smoothie & Nutrient Analysis. Explain the difference using the background information. (K/U, A)

7. Use a specific recorded result to answer the research question. Explain the scientific reasoning behind it. (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