

Name:

Rubric – Energy Dynamics Lab

Title, Background, Procedure complete _____/5
Background (includes butterfly life cycle) _____/5
Procedure (detailed for butterfly inquiry and plants) _____/15

Data Tables: Part 2 Plants

___Titles
___Headings (mass wet, biomass, productivity per day days 14 and 21)
___Units
___ Clearly defined table _____ 10

Data Tables: Part 3 butterfly control and Inquiry

___Titles
___Headings (larva mass, frass mass, remaining food mass)
___Units
___ clearly defined table _____ 10

Summary data table for butterfly data for all inquiry data – class data with mean, Standard dev. and SEM _____/5

Graphs:

Plant comparisons (title, labels, units) _____/10

Butterfly comparison - (title, labels, units, error bars) _____ 25

- graphs showing comparisons of the larva for mass gained, energy lost to respiration, and energy efficiency for the **control, heat, cool, 24 hr light, 24hr dark**.

Graph of individual butterfly data _____/5

Calculations for energy lost to respiration and percent efficiency _____/5

Plant calculations shown _____/5

Conclusion Questions (6 total) _____/10

Analysis:

Paragraph 1: REE (Results, Evidence, Explanations) _____/15

-needs to have stated the results of the experiment. Clear and concise

-needs to have evidence supporting the results.

-needs to have an explanation of the results. Including Net primary productivity of plants and larvae

-missing any of these is minus 2 points each.

PE (Possible Errors)

-Two possible errors that occurred in class or with our design

-Ways to avoid the errors in future

PA (Practical Applications)

-Links to the Laws of Thermodynamics, photosynthesis, respiration, and energy transfer

Total _____ 125

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Sample Plant data tables – you will need to create different table to make your graph or graph by hand.

Plant data:

Plant day 14	Mass per plant (g)	Dry mass (g)	% biomass	Total Energy Biomass x 4.35kcal/g	Productivity per plant per day (kcal/days)
Plant type 1	10	2	0.2	0.87	0.062

Butterfly data – Important numbers

Biomass of larva = 40% wet mass

Energy of larva at end = 5.5kcal/g (biomass = dry mass)

Energy of Frass = 4.76kcal/g

Energy in butterfly food = 4.35kcal/g