Section D. Analysis
1. Report your estimated uncertainty, the mean, standard deviation, and standard error for each of the five measurements:

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Can you explain any differences between your estimated uncertainties and the standard errors of your measurements?

Section E. Propagation of Uncertainty and Discrepancies.
2. Use your mean values of length and period above to find \( g \):

3. Use the derivative method to determine an estimate of \( \delta_g \). (Optional for PHYS115 students.)

4. Use the calculation method to determine an estimate of \( \delta_g \).

5. Report your value of \( g \) as a measurement interval. \( _____ \pm _____ _____ \) (units)

6. What is the discrepancy from the accepted value? \( _____ \pm _____ _____ \) (units)

7. Does your discrepancy lie outside the expected error? If it does, can you say anything about possible reasons?
Section F. Origin Exercise.

8. Report your mean, standard deviation, and standard error for $a_A$ (from direct calculation).

9. Report your value for $a_A$ from direct calculation as a measurement interval.
   $$______ \pm _____ _____$$ (units)

10. Report your mean, standard deviation, and standard error for $a_N$ (from direct calculation).

11. Report your value for $a_N$ from direct calculation as a measurement interval.
    $$______ \pm _____ _____$$ (units)

12. Report your value for $a_A$ from your best fit line as a measurement interval.
    $$______ \pm _____ _____$$ (units)

13. Report your value for $a_N$ from your best fit line as a measurement interval.
    $$______ \pm _____ _____$$ (units)

14. Attach your Origin graphs to this sheet.

15. Which model more closely fits the data, Aristotle’s or Newton’s? (circle one)
    - Aristotle’s
    - Newton’s
    - Both fit the data equally well

16. What is your evidence that one is a better fit than the other (or they are equally good)?

17. Report a value of the acceleration due to gravity at Europa’s surface based on Dr. Taylor’s data to your supervisor at Glenn Research Center.
    $$______ \pm _____ _____$$ (units)

18. Justify this choice of values.

GRADE: _______  GRADED BY ________
(out of 20 points)  (TA’s initials)