**Project 1.2.14 Glider Design: Competitive Flights**

Introduction

Direct competition under standardized testing conditions is a technique frequently used by the aerospace industry to evaluate the effectiveness of multiple designs. Although the design that produces the best results may not be selected for manufacturing, this process provides a method for quickly reducing the number of designs being considered.

In this project, you and your team will work to prove the efficiency and stability of your glider design in a standardized testing environment.

Equipment

* Engineering notebook
* Pencil
* Custom designed and constructed balsa wood glider
* Computer
* Project 1.2.13 Glider Design: Flight Data Recording Form
* Project 1.2.14a Glider Design: Competitive Flights Spreadsheet
* Glider Catapult
* Measuring Tape
* Stopwatch

Procedure

Working with your team, gather your glider design information and follow along to enter your glider design in the competitive flight testing stage.

1. Prepare to enter data onto Project 1.2.13 Glider Design: Flight Data Recording Form.
2. Register your team for flight by entering your team number and names on the Project 1.2.14a Glider Design: Competitive Flights Spreadsheet.
3. Prepare to launch your glider using the guidelines below.
   1. Each team can launch three flights.
   2. Each team will be allowed to make final adjustments to their glider before each flight.
   3. Each glider must be presented for inspection prior to launch.
   4. Gliders will be launched using the same catapult according to the instructions provided by your teacher.
4. Complete Project 1.2.13 Glider Design: Flight Data Recording Form after each flight.
5. Entered your data into Project 1.2.14a Glider Design: Competitive Flights Spreadsheet.

Conclusion

1. Explain the strengths and weaknesses of a competitive trial as a method to identify an optimal design.
2. Explain differences between your glider’s performance through flight-testing that was unexpected based on the AERY software predicted flight characteristics.
3. Based on the entire flight test data, from every group, explain conclusion that you can make about optimal glider designs for long distance flight.