

Balsawood Glider

LEVEL:	Grades 6 - 8
TYPE OF CONTEST:	Individual/Team
COMPOSITION OF TEAM:	1-2 students per team
NUMBER OF STUDENTS:	Preliminary – As determined by your local MESA Center Regional – 3 for 6 th Grade; 3 for 7 th /8 th Grade per Center
SPONSOR:	MESA Day Rules Committee

OVERVIEW: Students will design and build a glider made of balsawood, which will be launched indoors or outdoors using a hand-held catapult provided by the host center. The goal of the contest is to keep the glider aloft for the longest period of time. **Participation logistics, limits, and competition facilities may vary by host site. Advisors and students are responsible for verifying this information with their center director.**

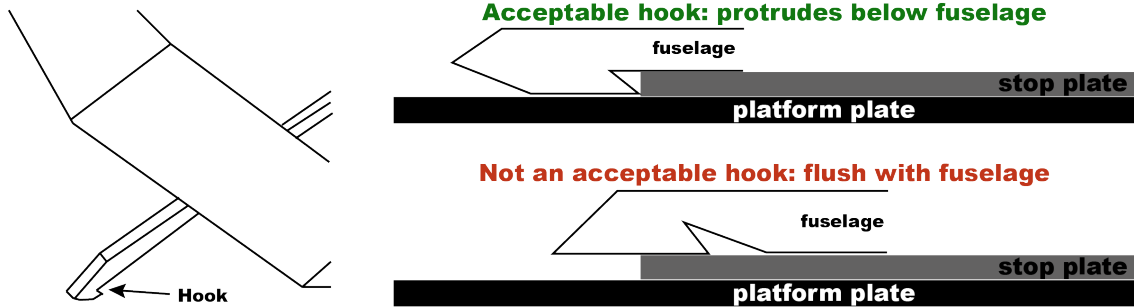
MATERIALS: The following are the ONLY materials that may be used to build the glider:

- Balsawood
- Glue, any type
- Modeling Clay
- Ink may be used as needed for small identification. No decorations, coatings or decals may be used.

GENERAL RULES:

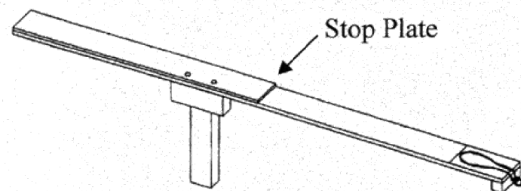
- 1) No ready-made kits are allowed. Each glider should be designed, constructed, launched and repaired by contestants.
- 2) There is no restriction on the size or weight of the glider.
- 3) Any glider that incorporates additional materials not mentioned above will be disqualified.
- 4) The glider should be competition-ready when turned in for inspection at MESA Day. No modifications to the glider are allowed after the glider is submitted to the judges for inspection.
- 5) The contestant's name(s), school, and center should be clearly visible on the glider. They should be identified using a sharpie pen or equivalent. **Do not use a separate tie-on label, as this will be considered to be a part of the model when it is turned in for judging.** Failure to correctly identify the glider as noted will result in a 10% POINT DEDUCTION from the final score as calculated in item 8 of 'Judging'.

- 6) The glider should have a hook on the underside of the fuselage to permit launching with the catapult. Cutting a flush notch into the underside of the fuselage is NOT acceptable. (see diagram below).



- 7) The gliders will be launched using a catapult provided by the host center. Catapults have the following specifications:

- Platform Plate: One piece of wood
5mm x 45mm x 700mm
- Stop Plate: One piece of wood
6mm x 45mm x 350mm
- Handle: 20mm x 30mm x 150mm
- "T" Handle Support: 15mm x 15mm x 75mm (Two screws attach the handle support to the platform and the stop plate)
- Screw Eye Attachment Block: 15mm x 15mm x 45mm
- Screw Eye
- Rubber Band: Office Max # 32 or equivalent. The rubber bands will be kept in a sealed plastic bag. **The band on the catapult will be replaced by a new one every five launches.**



- 8) The glider is hooked to the rubber loop at the end of the catapult. The contestant pulls the glider back until the hook touches the wooden stop at the front of the stop plate on the catapult (see diagram on previous page). The launch angle, up to 60° from the horizontal, and attitude of the catapult is determined by the contestant. Any launches made with the nose hook pulled beyond the stop plate will be counted as an unscored launch, thereby reducing the number of scored launches for the contestant.
- 9) The release height of the glider shall not exceed six feet above ground level as measured by a stick held vertically next to the contestant during launch. Launches above six feet or more than 60° shall be counted as an unscored launch, thereby reducing the number of scored launches.
- 10) The contestant releases the glider after being given the "OK" from the official timer. Timing starts as soon as the glider is released and stops when the glider hits the ground or comes to rest against any obstruction. The glider can be launched in any direction, starting from the prescribed launching area.
Each glider is given three (3) launches. The winning glider is determined by the following formula: *Total Flight Time (sec) = Longest flight time + Second longest flight time*
- 11) Repairs are allowed between flights. However, no changes may be made to the basic design of the glider once the competition is under way. Repairs should be made by the contestants.

JUDGING:

- 1) Once an entry has been registered it may not be altered or repaired to meet technical inspection.
- 2) No part(s) of the glider may be removed or added after the specification check has occurred. No backup gliders will be allowed. No tools or materials will be supplied at MESA Day.
- 3) Each team will be allowed three non-consecutive launches. Each glider should be ready for competition when called. The glider should be launched within 30 seconds of being called or contestants will forfeit that launch. Three stopwatches will be used by three judges for timing flights. The flight time will be determined by taking the middle value of the three times.
- 4) The judges will determine where the launching site should be. They will ensure that there is sufficient space available that the gliders can circle and fly downwind without hitting obstructions. Spectators should not be allowed within the flight area at any time during the competition.
- 5) In the event of a tie, the glider with the longer single flight time will be the winner.
- 6) Times will be recorded, at a minimum, to the nearest hundredth second.
- 7) Overall scoring is determined from this formula:
Total Flight Time (sec) = Longest flight time + Second longest flight time

AWARDS:

- Awards will be given per grade level: 6th grade and 7th/8th grade.
- Medals will be awarded for 1st, 2nd, and 3rd place based on Total Flight Time.

ATTACHMENTS/APPENDIX:

- Specification Checklist

Specification Checklist

**Note: As the name above implies, this list is intended simply as a guide for meeting the required competition specs. It should not be treated as an official judging document.*

- Glider made of balsa, glue and clay; no metal objects on/in glider
- Glider has protruding hook, not cut into fuselage
- Gliders are properly labeled with names, school and MESA center
- Glider has no decorations, decals, or extra surface finish material.