



GLIDER COMPETITION

Spring 2018

Rules and Design Requirements



Introduction

The Orlando Youth Aviation Center (OYAC) is sponsoring a glider competition amongst local students. The purpose of the competition is to give these local students the opportunity to utilize their knowledge of aircraft design and performance and to learn even more by designing, testing, and building gliders and competing against other local teams of students. The rules and design requirements for the competition are as follows:

Rules and Restrictions

1. Teams must design and build a glider from scratch. No kit built gliders or parts from any kind of aircraft or rocket kit are allowed. Other than supplies and parts from a kit, there is no restriction on the materials used in building the gliders (see rule #2 for other materials not allowed).
2. Do not use metal (including coins), glass, spikes, rocks, gravel, or any other hard material to construct the glider. The intent of this rule is to prevent any injuries should the glider come apart or hit a person. Use of these materials will automatically disqualify the team from the competition. The Head Judge will make the final decision as to whether the materials are not allowed.
3. Only one glider per team is allowed. Each team will consist of 3 students.
4. The payload for the gliders will consist of marbles that will be supplied by the competition coordinators on the day of the competition. The marbles will be 0.56 inches in diameter and have a mass of 3.8 g (0.134 ounces) each. These are ordinary craft marbles that can be bought at any craft store.
5. The glider must carry exactly 16 marbles. 16 marbles will have a mass of 2.1 ounces.
6. The marbles must be kept in a single location in the glider.
7. On the day of the competition, the marbles supplied by the competition coordinators will be sealed in a sandwich bag. The marbles are required to be kept in this sandwich bag to ensure that they do not spill out if the glider is damaged.
8. The gliders will be hand launched with no power assist (springs, bungee chords, etc.) or any other device by a team member in an indoor facility to be designated by the competition coordinators. The team member must have their feet planted in a box approximately 18 inches by 18 inches square when launching the glider. If the person's foot is outside the box upon throwing the glider, the flight will have to be redone.
9. No radio control of the gliders is allowed.
10. No glider may have a total weight (including the marbles) more than 10 ounces (283.5 grams), nor may it have a total weight less than 6 ounces (170.1 grams). Aircraft with a total weight less than 6 ounces or greater than 10 ounces will not be eligible to compete. Again, the 6 and 10 ounce weight limits include the 2.1 ounces of marbles.
11. The glider must have a minimum wingspan of 2 feet (24 inches). This will be measured from wingtip to wingtip with a tape measure.
12. The glider body must be no more than 4 inches wide and no more than 4 inches high. This is for the body only and does not include the wing span or the tail surfaces. There is no restriction on the overall length of the glider.
13. The glider body may not consist of folder paper (no large paper airplanes are allowed).
14. Ballistic entries are not allowed. In other words, you cannot toss it like a shot put.

15. Points will be earned by the distance that the glider travels. One point will be awarded for every foot of gliding distance.
16. Each team will be given a total of 4 flight attempts. The team's total score for the competition will be the sum of the scores of all flight attempts.
17. The distance glided will be measured using the nose of the aircraft, regardless of what position the aircraft is in upon landing.
18. Any flight that results in the aircraft breaking into multiple pieces will be reduced by 25%. Hence, if the glider travels 40 feet but any piece breaks off upon landing, the distance will be scored as 30 feet. This includes the marbles, which must remain inside the glider during the impact of landing for that flight to count. The only exception is if the aircraft travels the entire length of the facility being used (likely an indoor atrium) and hits the wall at the far end of the facility. If impact with the wall causes the aircraft to break into multiple pieces, that flight will still count with no penalty.
19. No wheels are allowed on the glider. It must slide to a halt on the ground, not roll to a stop.
20. The distance glided by the aircraft will be measured in a straight line from the starting point using distance markers on the ground, as shown below. The measured distance will be determined only by the distance from the starting point perpendicular to the distance markers. In other words, even though the aircraft may travel the distance shown by the solid line below, the measured distance will be that of the dashed line. It is up to the teams to design and develop an aircraft that is directionally stable.
21. The competition coordinators will set up a boundary (shown by the very thick lines below) which are guaranteed to be clear of obstacles and people. If an aircraft strays outside of this boundary it may hit a wall or support column and suffer damage. As mentioned above, if any pieces break off from the glider its flight will be reduced by 25%. If the glider does not suffer damage outside of the boundary, there is no penalty. The boundary is set up to define the region in which the glider is guaranteed to not be in danger of hitting a wall or other structure. It will be approximately 10 feet wide and again it is up to the teams to build a glider that can fly straight and thus not stray outside of this safe zone.

