

Rules for the 2008 West Kentucky Regional Moonbuggy Competition

The following are the primary constraints for the Moonbuggy competition. If you have questions or need clarification on any of these rules, please contact me.

1. *Moonbuggy Teams:* Each moonbuggy must be the work of a team comprised of students from a high school or group of high schools in collaboration.
2. *Propulsion:* Human powered (one or both passengers); energy storage devices, such as springs, flywheels or others, are not allowed.
3. *Unassembled Dimensions:* The unassembled vehicle must fit (or be collapsible to fit) in a volume of maximum dimension 4' x 4' x 4'.
4. *Weight:* The vehicle must be lifted and carried 20 feet by the two passengers, without aid of any sort (e.g., no wheels) in the unassembled 4'x 4'x 4' volume.
5. *Assembled Dimensions:* The maximum width of the assembled vehicle is four (4) feet, including wheels. No body part of either passenger may be closer than 15" to the flat surface on which the vehicle is supported.
6. *Construction:* Vehicles, or parts of vehicles not constructed by the entering team are not acceptable. **Students are expected to build their own buggies, and the course drivers, chosen from each team, must also be builders of the vehicle.**
7. *Wheels/Tracks:* No constraints are imposed in the means of contact between the buggy and the simulated lunar surface. We encourage creativity and participants are open to using wheels, belts, treads, etc.
8. *Turning Radius:* The vehicle must have a turning radius of 20 feet or less.
9. *Safety:* Each Moonbuggy must include a braking system capable of holding the vehicle still on a 30° slope. The center of gravity of the Moonbuggy should be low enough for the vehicle to climb a 30° slope. The Moonbuggy should also be free of any sharp edges.
10. *Spirit of the Rules:* Vehicles that do not satisfy the **intent** of the moonbuggy competition can be disqualified.
11. *Moonbuggy Passengers:* Two (2) student team members (one female and one male). The passengers must wear protective clothing including helmets, long pants, and gloves. Further, the passengers should avoid wearing baggy clothing that could get caught in rotating parts (Note: shoelaces must be covered with tape). No appendages such as stilts may be used on the feet of the moonbuggy passengers. Pushing the moonbuggy with a pole or other implement is not allowed. **Passengers must be belted into their seats at all times using an appropriate seat belt.**
12. *Speed & Maneuverability Course:* In order to test the speed & maneuverability of your moonbuggy, you will be challenged to complete a slalom course in the shortest time. Each team will be given two attempts at the course. The best time including penalties will be **multiplied by a factor of 3** and added to your overall time.
13. *Obstacle Course:* In order to test the overall design of your moonbuggy including its durability, each team will be challenged to complete an obstacle course of simulated lunar obstacles constructed from wood, gravel and other miscellaneous items. During the **first run** of the obstacle course, you will be required to complete two roving experiments as described in Rule #14. Each team will be given two attempts at the obstacle course with the best time including penalties being added to your overall time.

14. *Roving Experiments*: During your first run on the obstacle course, you will be required to complete two scientific experiments that a lunar rover might be required to take. Note that these experiments will not be timed (i.e. your obstacle course time will stop upon entering the measurement area and will restart upon leaving).

*** The specific roving experiments will be determined by December 31, 2007 ***

Time will be subtracted from your overall time (up to a total of 4 minutes!) based on the accuracy of each measurement according to Table 1 below.

Table 1: Time Bonuses for Roving Experiments

% Error of Measurement	Time Subtracted (min:sec)
0-10%	2:00
10-30%	1:00
30-50%	0:30
> 50%	0:00

15. *Winning Team*: The winning team will be the one having the shortest overall time including moonbuggy assembly, speed & maneuverability course time, and obstacle course time.
16. *Alcohol*: The consumption of alcoholic beverages or controlled substances by any team member at any time during the event is strictly prohibited and is grounds for disqualification of the team.
17. *Budget*: Teams are *encouraged* not to spend more than \$1500 on their vehicle.
18. *Penalties*: See Table 2 below for the list of time penalties.

Table 2: List of Time Penalties for Obstacle Course

Infraction	Time Penalty (min:sec)
Carry requirement	2:00
4' X 4' X 4' volume requirement	2:00
15" clearance requirement (measured before and after run)	2:00
Assembled width of 4' requirement	2:00
Contacting edge (ropes or cones) of obstacle (1 per obstacle)	1:00
Ground contact by driver on obstacle (1 per obstacle)	1:00
Passenger requirement (1 male, 1 female)	Disqualification
Missing or not attempting an obstacle	Disqualification
Unsafe vehicle (judges discretion)	Disqualification
Late start (10 minutes after being called to the start)	Disqualification

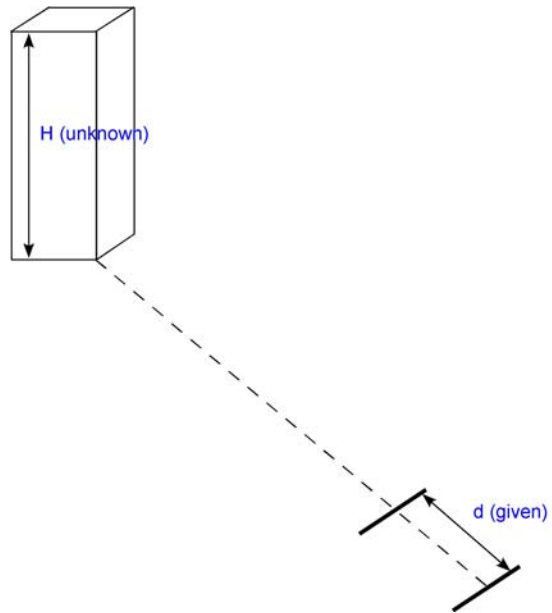


Figure 1: Schematic of Height Measurement: Two points on the course will be clearly marked. These points will be collinear with the object whose height is to be measured. The distance between the points will be given. This measurement will only be taken on Run #1 and is untimed.