

OBJECTIVE: To modify a “Lou-Vee Air Car” to achieve maximum acceleration in the straightest path possible over 4 meters.

PARAMETERS & CONSTRAINTS:

TRACK

The “track” will consist of the floor of the Engineering Physics Lab, marked off by masking tape and meter sticks measuring 4 meters from starting line to finish line, and 1.5 meters in width. A “center guiding line” will be marked out, and used for reference and scoring.

VEHICLE

The vehicle must be a modified version of the “Lou-Vee Air Car” constructed in class. The car must be propelled by at least one “propeller” designed to push the maximum amount of air possible. **NO BALLOONS.**

The vehicle must be self-propelled (a small push may be allowed behind the starting line to get the car started if necessary), and the propulsion system may not use any chemical or electrical devices. The power may only be supplied by applied elastic potential energy (rubber bands, springs, etc.) which may be pre-wound, then released.

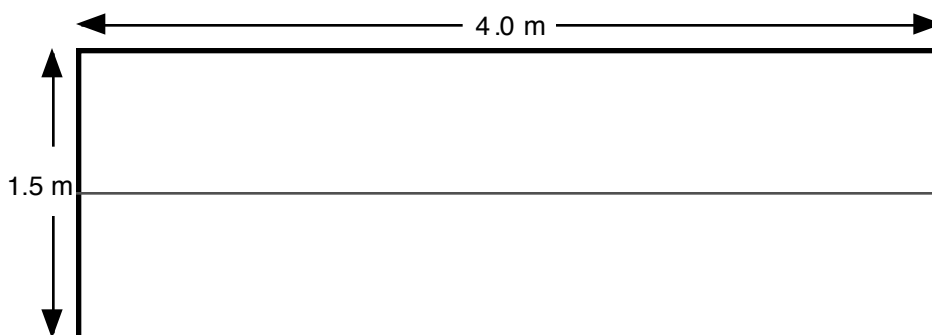
The vehicle may be constructed or fabricated out of any material available to the participants in school or at home - wood, plastic, styrofoam, cardboard, tin, etc., and/or parts of common household items (CDs, wood spools, jar lids, etc.).

Parts taken from toy cars, building sets (erector, leggos, k-nex, etc.), model airplanes, are **NOT ALLOWED**, and may result in disqualification from the competition.

The size of the vehicle must be such that the wheelbase is **NOT LESS THAN 5 cm, NOR GREATER THAN 30 cm.** No constraints on vehicle height, length, or weight.

SCORING

A minimum “C-” grade will be given to a team for submitting a car **ON THE DUE DATE**, that can demonstrate self-propulsion.



Cars will run one at a time. For the first trial, the car will start with a score of 100.0 points. The car must be “pre-wound”, or ready to run, from a position behind the starting line. One small push will be allowed to get the car to overcome inertia. Timing begins when any part of the car “breaks the plane” of the starting line, and ends when the car either: breaks the plane of the finish line, or stops for more than 2 sec. while on the track. The car may **NOT** be touched after it starts.

One point will be deducted from the score for each second (and fraction thereof) that the car takes during this run. An additional one point will be deducted for every cm away from the center line when the car crosses the finish line. If the car doesn’t cross the finish line: its progress will be marked at the stopping point, and one point will be deducted for every 10 cm from the finish line. If the car touches either of the side barriers, an additional 1 point will be deducted. The score for that trial will be announced, and the team may opt for a second trial, after all teams have had their first trial. The scoring will be exactly the same, except that the car will start with a beginning score of 95 points. A third trial may be taken after all second trials, but the car will begin with a score of 90 points. **THREE TRIALS MAXIMUM.** The latest trial score is the accepted score, replacing all previous scores. Final team scores will be ranked, and divided into corresponding letter grades from A+ to B- .