GEARLOOSE

Team Event **Points: 20**

Introduction

Creativity is seeing what everyone else has seen and thinking what no one else has thought.
-Einstein

Everyone as a child desires and have impulse for making simple machines. All you need is to awake and bring out the engineer inside you. Get ready to baffle your mind to come up with an ingenious idea for this year's problem statement of designing a vehicle that can perform certain tasks.

Mission Objective

The objective for this competition is to design a launch vehicle that can travel down an incline, launch another object (a six faced cuboid) clear over a wall and try to land it in the inner-most zone of the box.

Problem Statement

* The arena consist of an incline followed by a flat horizontal surface and a wall (4" high and 1'' thick) and a square box lying at its base.
* The launching bot/vehicle has to move down the incline and traverse the flat surface.
* Next it must launch an object by means of some internal potential energy or acquired kinetic energy or due to impulse received when it hits the wall.
* It must be capable of performing two tasks-

1.) Firstly it must smoothly descend the incline and cross the horizontal surface.

2.) Secondly, it must launch an object to jump across the wall and land inside the square box.

Rules and Regulations

• A team may consist of a maximum of 3 members from the same pool.
• The dimension of the launching vehicle must not exceed 8''x4"x4" (length x width x height).
• The dimension of the object to be launched must not exceed 2"x2"x2" (length x width x height).

• All components used must be part of the vehicle and must remain attached to the vehicle at all times (except the object to be ejected).
• The launch vehicle must carry along the object to be launched till it reaches the base of the wedge.
• The launched object cannot be lighter than air.
• Only non-electrical sources can be used. They must not pose any kind of danger to the spectators and competitors.

** NO EXPLOSIVES OR CHEMICAL REACTIONS OF ANY KIND WILL BE PERMITTED.

• The launching mechanism may be some sort of spring, wind up mechanism, compressed air, etc. All part must remain with the vehicle at all times (except the ejected object).
• The only power for the vehicle to get passed the marked line (see fig.) will be potential energy.
• Vehicle should not damage the arena in anyway otherwise it might lead to disqualification of the team.
• The chassis of the vehicle can be made from cardboard, plastic boxes, styrofoam etc.

Scoring

• A maximum of 100 points will be awarded to a team.
• 25 points will be awarded if vehicle moves stably on the incline and reaches the base. If vehicle/launch object falls no marks will be given.
• 15 points will be awarded if the vehicle further reaches till the wall end.
• 50 points will be awarded if the payload object jumps across the wall cleanly without touching it. The square box area will be divided in four concentric square zones. The side length of innermost square will be 15cm, then 25 cm, 40cm and 60cm successively.

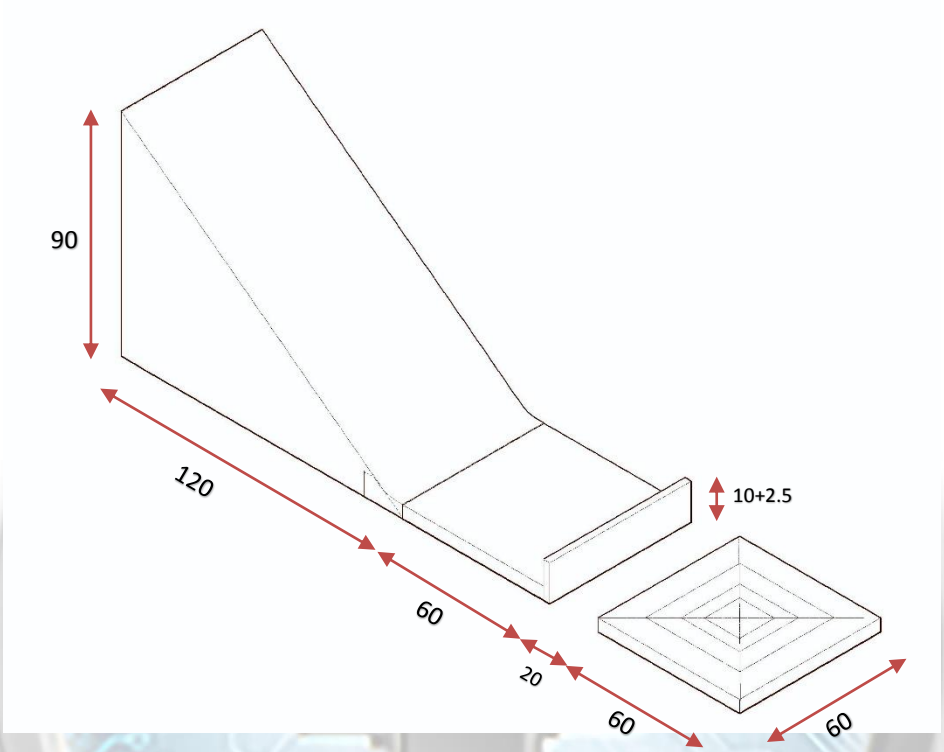
Point distribution:

(A) Innermost Square (a=15cm) – 50 points
(B) First Outer Square (a=25cm) – 30 points
(C) Second Outer Square (a=40cm) – 15 points
(D) Third Outer Square (a=60cm) – 5 points
Lands outside square box or fails to be launched – 0 points

The zone will be decided by the first point of contact with the square box. Suppose the launch object lies on line, then it will be considered in the inner zone. Let's say it falls on the boundary between zone (B) and zone (C), then the team will get 30 points.

• 10 points if it lands on the same initial base face at the time when the launching vehicle was rolled down the wedge.

Arena:



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