

Term Project
CREATIVE DESIGN
TST 161 – Dr. Norm Asper
SELF PROPELLED PING PONG BALL LAUNCHER

Given:

Tile floor (12 x 12 tiles)
3 ft. wide by 17 ft. long lane (marked by tape)
3 ft. diam. Target (see sketch)
True-Play Ping Pong ball

Required:

Design and build a self-propelled vehicle that will launch a ping pong ball towards a 3 ft. diameter target. The following rules apply.

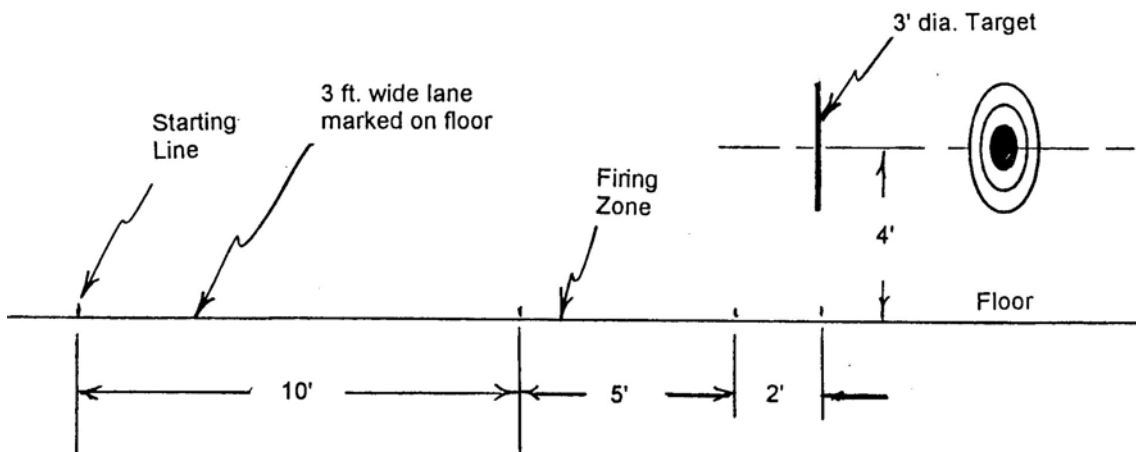
1. The device must leave the starting line under its own power. The devices may employ manual brakes (i.e., human fingers on the wheels or power source) to position them on the track. The operator may then merely “let the device go” without pushing.
2. Once the vehicle is started, no external communication, interaction, or influence of any kind is allowed (i.e., the system must be completely autonomous).
3. The device must fit into an 18 x 18 x 18-in. box.
4. The ping pong ball must be launched within two (2) minutes.
5. To provide power for the vehicle, rubber bands, springs, and/or electric motors (no more than 3 volts supplied by two AA batteries) may be used. No chemicals, compressed gasses, or explosives may be used.
6. No part of the launcher may be left behind at the start line.
7. The device must launch the ping pong ball from the “firing zone” while in motion.
8. The device must stop within the “stopping zone” without touching the target.
9. Only one shot per pass will be allowed. The pass is considered complete once the ball has been launched.
10. True-Play Star brand ping-pong balls will be the official balls.

Scoring:

The objective is to fire the ping pong ball within the designated launch area and hit the target. Scoring is based upon both the “Operating Prototype” and the accuracy of the competition. In the evaluation of the prototype, forty (40) points will be awarded for simply traveling the length of the 10ft approach lane. Thirty (30) points will be awarded for launching from the “Firing Zone”, and thirty (30) additional points will be awarded for stopping within the “Stopping Zone” whether hitting the target or not.

Scoring for the “Accuracy Competition” is based upon One Hundred (100) points for a Bull’s Eye, Seventy Five (75) points for hitting the second ring, and Fifty (50) points for hitting the outer ring.

In the event of a tie, the highest average score for the three attempts will be the winner. In the event of an average score tie, the fastest average time from start to final stop will be the winner.



Car Number _____

Self Propelled Ping Pong Ball Launcher Vehicle Design Evaluation

Score	Specific Coments
_____	Use of Simplicity (20) _____
_____	Use of Appropriateness (20) _____
_____	Use of Functionality (20) _____
_____	Use of Economy (20) _____
_____	Attention to the "Principles of Design" (20) Unity, Variety, Balance, Rhythm, Emphasis, Proportion, and Scale

_____ Total Score

- out of 100 -

Names _____

Self Propelled Ping Pong Ball Launcher

Performance Scoring Sheet

Working Prototype (Best score @ 8%)

	Run #1	Run#2	Run #3
1. Traveling the length of the 10 ft "approach lane". (40 pts)	_____	_____	_____
2. Launching within the "firing zone". (30 pts)	_____	_____	_____
3. Stopping within the "stopping zone". (30 pts)	_____	_____	_____

Accuracy Competition (Best score @ 5%)

4. Bull's-eye. (100 points)	_____	_____	_____
5. Second Ring. (75 pts)	_____	_____	_____
6. Outer Ring. (50 pts)	_____	_____	_____

TOTAL = _____

Tie-breaker Average Score = _____

Time of run. (2 min. limit) _____

Perfect score tie-breaker
Average Time = _____