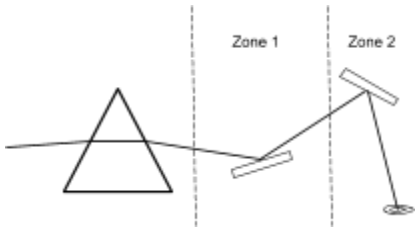
Laser Light Show



Objective:

To hit two mirrors and then a fixed target with a laser, by placing one plane mirror in zone 1 and a second plane mirror in zone 2. The laser light will pass through a clear triangular prism, so teams may wish to determine the index of refraction of the prism material to help predict the path of the light.

Rules:

1. The timer begins when the team receives its triangular prism and laser pointer. Teams are given the opportunity to determine the index of refraction of the prism material, and protractors, rulers, and calculators will be available for use.

2. The team hands in the prism and laser pointer in exchange for a template indicating where the incident laser, prism, and target will be placed, as well as the locations of zone 1 and zone 2.

3. The team draws on the template. The team must include a line to indicate where the reflective surface of mirror 1 is to be placed in zone 1, and where the reflective surface of mirror 2 is to be placed in zone 2, so that the laser spot will hit both mirrors and then the target. Mirrors will be front surface mirrors.

4. The timer stops when the team is ready to position the mirrors.

5. The score is the horizontal distance from the center of the target to the laser spot. Smallest distance wins.

6. All teams in which the laser beam fails to hit the 1st mirror will tie for last place. All teams in which the laser beam fails to hit the 2nd mirror will tie, and will be ahead of those teams in which the laser failed to hit the 1st mirror but behind those teams that were successful in hitting both mirrors.

Tiebreaker: the shortest time will serve as a tiebreaker.

Time limit: 15 minutes.