

OPTICS _B|C

SCIENCE OLYMPIAD COACHES WORKSHOP_2018

OVERVIEW

- Two part competition:
 1. Written test
 2. Laser Shoot Exercise
- Teams of 2
- Approx. time: 50 minutes total

EVENT PARAMETERS

- Each team may bring:
 1. 3-ring binder (any size) containing information in any form from any source attached using the available rings (can be removed during the event)
 2. Measuring tools and premade templates
 3. Writing utensils
 4. 2 calculators (any type, for use during any part of competition)
- DO NOT BRING LASERS OR MIRRORS OF ANY KIND

PART I: WRITTEN TEST

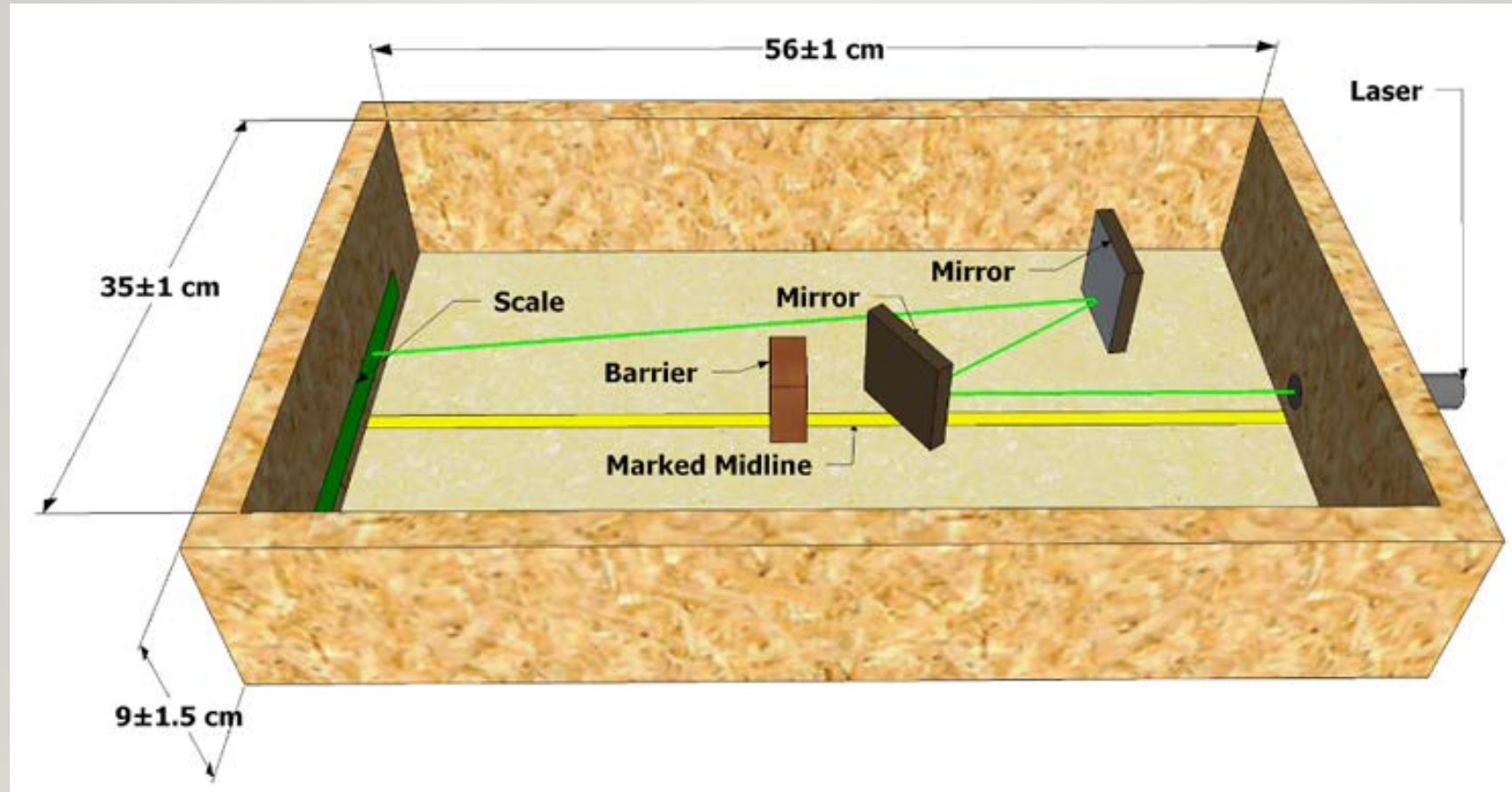
- Minimum of 20 minutes to complete*
- Multiple choice, true-false, completion, or calculation problems
- Minimum of 2 questions from each of the categories listed in the Optics Event Guide

PART 2: LASER SHOOT EXERCISE

- **Time:** up to 4 min.s (active time to complete the task)
- **Objective:** reflect a laser beam with mirrors around barriers towards a **Target Point**
- Mirrors will begin in the **Home Position** (designated by the event supervisor)
- **Supervisor:** demo beam alignment and give “3, 2, 1, Start”; “3 minutes passed” warning
- Students may use any measuring tools, templates, calculators, or writing utensils they brought with them to aid in the exercise
- *THE LASER MUST NOT BE TOUCHED, MOVED, OR TURNED ON*
- Ends when A) 4 minutes have passed, B) participants intentionally remove a mirror cover, or C) participants both say “Stop” to end their run

PART 2: LASER SHOOT EXERCISE

- Testing the results:
 1. PARTICIPANTS must remove the mirror covers; they may make no markings on or other adjustments to the setup at this point (will result in violation)
 2. PARTICIPANTS must turn the laser on
 3. The Supervisor will mark where the laser lands on the paper on the back wall of the set up
- Templates, tools, etc. may remain on the Laser Shoot Setup during testing
- Supervisor will review data/results with team upon completion



SCORING

- $FS = TS + MS + AS + BS$
- FS = Final Score (out of 100); high score wins
- TS = Test Score \rightarrow (Part I score / Highest Part I score for all teams) \times 60 points
- MS = Mirror Score \rightarrow (# moveable mirrors laser reflects off of) \times 2 points; maximum 10 points
- AS = Accuracy Score \rightarrow (15 - (accuracy (mm) / 10)) points
- BS = Barrier Score
 - **Division B BS** = 15 points if laser reflects off of barrier mirror
 - **Division C BS** = (# of barrier mirrors laser reflects off of) \times 5 points; maximum 15 points

RESOURCES

- [Optics Score Sheet Excel Files](#) (preformatted excel score sheets for each event)
- [Optics Event Resources Website](#) (how to make your own Laser Shoot Setup, tips and tricks, template ideas, research materials)
- [Science Olympiad Optics Page](#) (event guide sheets, resource links)