



It's About Time

Coaches Clinic Presentation

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Overview

- Two part event about time (and all things related to time)
 - Written test
 - Timekeeping device
- Impound required
- Students will get 5 minutes to setup and calibrate device at start, then called up to use device during remainder of period during test

Intent

- Test Student knowledge of concepts related to time
 - Different timekeeping devices (and their history)
 - Different calendars
 - Standards
 - Use in chemical and physical phenomenon
- Basic components of various timepieces
- Real-world problems with timekeeping
 - Computer networks
 - GPS
 - Measurements

More Details

- Two parts of the event: written test and device performance
- Tests knowledge of time, astronomy, physics, etc.
- 45% of score from device testing part
- 45% of score from written test part
- 10% of score from pre-created charts / tables associated with the device
- Students bring: Calculators (for use during calibration and written test portion)
- Reference material in 3-ring binder
- Writing utensils
- Eye protection not required but recommended
- Tools and supplies to calibrate / operate their device
- No clocks will be visible in the room
 - Devices for calibration can be used without impound, but all components integral to the device operation must be impounded.
- 2 students per team allowed

Device Construction

- Device built prior to the competition
- The device itself is not allowed to utilize:
 - Commercial counters
 - timepieces or timepiece components (balances / beakers / etc don't count)
 - Electrical components (a battery operated scale *is not* acceptable)
 - Chemical / Physiological reactions (pulse) are not explicitly excluded, but please don't
- Calibration equipment can be electrical, but must be collected before device operation
- Must be built to contain spillage and minimize impact to other teams (no load noises)
- Impound details:
 - Include everything needed to operate the device
 - Materials must fit into an 80cm cube during impound, can expand during competition
- Mark everything with school name and number (tape and marker will be provided)

Time Trial Portion

- 5 min setup / calibration period (allowed to use electrical devices)
- 3 time trials between 10 – 300 s
- 10 - 90 s
- 60 – 300 s
- 10 – 300 s

- Target times are the same for all teams
- Teams are NOT informed of the target times prior to the event start (unknown at impound)
- When the team is ready to commence timing, the Supervisor will give a “3-2-1-START” countdown. Device is then to provide a audio or visual signal when the time permits (signal needs to be clear)
- Teams will be provided 90 seconds at Regionals between trials to reset device (60 seconds at States, 30 seconds at Nationals)

Time Trials Scoring

- Start with 15 points per trial (45 points total)
- Points deducted at a rate of :
 - 10 – 90 s trial: 0.3 pts / 0.1s
 - 60 – 300 s trial: 0.2 pts / 0.1s
 - 10 – 300 s trial: 0.1 pts / 0.1s
- Max penalty of 15 points per trial (can't go below zero)
- Penalty of a % factor for competition or construction violations, not impounding
- Supervisor should give team an opportunity to correct any messes before assessing penalty
- Time trial #3 is the first tiebreaker

Written Test

- 20 minutes minimum
- Questions may be multiple choice, true-false, completion, or calculations
- Test worth 45 % of the total score
- Designated question is the second tiebreaker
- Must include at least 4 questions from each:
 - Time Standards
 - Physics of modern timekeeping devices
 - Historical timekeeping devices
 - Waves and frequencies
 - State and Nationals only:
 - Dynamic Systems
 - “Computer representations of time, methods of time synchronization, and situations in which accurate time keeping has significant impact”
- Be careful of relying on examples in rules as limits
 - Use of “e.g.” does not limit topics

Sample Sequence

- Impound in the morning
- Arrive at schedule event time (50 minute window)
- 5 minutes to setup and calibrate devices
- Start taking written test
- Teams called up 1 at a time for device performance (3 time trials)
- Max time trials are 90 s, 300 s, and 300 s (max of 11.5 minutes)
- Minimum of 90 seconds between trials to reset at Regionals (another 3 minutes)
- Some time for time trial scoring and supervisor communications

Tips and Advice

- Simpler is better: Minimize effort required to setup and reset device
- Compensate for human reactions when reading time (practice, practice, practice)
- Read all questions carefully
- Tackle easy ones first, skip ones that may take time
- Regularly check www.soinc.org for Clarifications, FAQs, and Rules / Policies (Lasers, Safety, Building, etc)
- Ask your Regional supervisors and Board for advice on design and what is / isn't acceptable (after checking the above)