State Director's Guide to Running Junkyard Challenge

Junkyard Challenge is a new event for the National Science Olympiad B and C division. In the event, students construct devices on-site to solve creative engineering challenges using only the materials that will fit in a cardboard box of specified dimensions. The event stresses planning, resourcefulness, and creative problem solving. When running a construction event at a tournament, considerations must be made for space, time, manpower, and coach flexibility requirements. Because these resources are at a premium, Junkyard Challenge has been designed with flexibility in mind. Three event scenarios are presented here to help with the planning process. All scenarios assume a *full tournament of 60 teams* to help accommodate even the largest of tournaments.

Scenario 1: Full Block Scheduling
Space Requirements – Low
Staff Requirements – High
Coach Flexibility – Low

In this scenario, teams compete in three groups of twenty teams. Each team is given half a lab bench to use as working space and their materials box is stored below the bench. If an open floor is used, about 500 square feet of floor space are needed (teams sitting on the floor in a 5'x5' square). When the event starts, students are given thirty minutes to construct their devices, leaving twenty minutes to judge. Using four judges or judging teams, each judge has five minutes to evaluate a device and note its vital measurements on the score sheet. Final scoring can be calculated during the next build cycle. Strict schedule adherence must be maintained to prevent delays in starting the next competition block. Some teams will finish before the thirty-minute time limit, alleviating some of the schedule pressure on the judges. With a smaller turnout, more time can be shifted from judging to construction.

Scenario 2: All-Day Event with Slot Signup
Space Requirements – Med
Staff Requirements – Med
Coach Flexibility – Med

In this scenario, the event is run all-day like many other building events. Teams sign up for an hour-long slot and begin their construction upon arrival. This gives coaches some added flexibility in building their team's schedule. If slots are staggered ten minutes apart and 4 teams are assigned per slot, the entire event can be completed in three hours using only three judges or judging teams. Care must be taken to track each team's individual construction time. During peak construction time almost 30 teams will be building at once. To accommodate the space needs of the teams, two full labs or around 750 square feet of floor space are recommended (teams sitting on the floor in a 5'x5' square).

Scenario 3: Morning Construction with All-Day Judging
Space Requirements – High
Staff Requirements – Low
Coach Flexibility – High

In this scenario, all students complete the construction phase of the event simultaneously either before the tournament begins or during the first competition block. Teams return later at their scheduled time slot for judging. Since only the judging is done at each scheduled time slot, coaches have maximum flexibility when scheduling their teams. If slots are staggered five minutes apart and two teams are assigned per slot, the entire event can be judged in three hours using only two judges or judging teams. Since all teams construct at once, floor space is at a premium. Three full labs or around 1500 square feet of floor space is recommended (teams sitting on the floor in a 5'x5' square).

The scenarios presented here represent only three possible ways to run Junkyard Challenge and give Directors some idea of how to balance the space, staffing, and coach flexibility requirements of their tournament. The time to run the event is fairly consistent across each of the three scenarios (between 3 and 4 hours) due to the requirements of 60 teams building on site. With fewer teams, all estimates will decrease. Using these scenarios as a guide, planning for Junkyard Challenge becomes an easy task.

Event Supervisor’s Guide to Running Junkyard Challenge

As construction event, Junkyard Challenge is easy to run. Event execution is broken down into five basic activities: setup, impound, arrival and construction, judging, and completion. Each of the five activities is discussed in detail below.

Setup – Divide the competition space up into areas for each team to build using the event scenarios above as a guide. Each team will typically need a 5’x5’ square or half a lab bench. Set aside a table for measurement tools like scales or meter sticks and an area for impounded materials boxes. Ensure that all judges are familiar with the core rules, the challenge, and the judging procedures, providing copies of all supporting documents to each judge as a reference. Finally, select values for any free challenge variables before construction begins.

Impound – All materials boxes should be impounded before competition begins. Have each team open their box to demonstrate that there is no contraband. After inspection, have the team fill out their information on the top of a score sheet and tape it to the top of their materials box to identify it. Finally, set it aside in a safe location. Teams must not be allowed to add anything to their box after impound.

Arrival and Construction– Assign teams a competition space as they arrive. Be sure to check each tool box to ensure no construction materials are smuggled into the competition. If all teams are building at once, announce the free variable values and start the construction clock. Make periodic announcements letting the teams know how much longer they have to build. When the construction time has elapsed, have all teams put their tools into their materials box with the lid closed to ensure they do not make any changes to their device during judging. If the event is being run as a walk-in, seat each team as it arrives and individually announce the free variable values. Fill the competition area from back to front so that teams are not climbing over each other to get to their seat. Note the time in the top right corner of the team’s score sheet and let them know when they need to be completed. Also note the start and stop time in a judge’s ledger so the judges know when each team should be completed. Make sure the team knows to find a judge when they are done with construction to initiate judging. If a team finishes early or runs out of time, have them put their tools into their material’s box until a judge can get to them.

Judging – Break the judges up and have them work through the teams. When meeting a team, the judge should first introduce him or herself, ask for the score sheet, and then give the team a reasonable amount of time to do any last minute setup before demonstration. Next, vital measurements should be taken and recorded onto the score sheet, either before or after demonstration as necessitated by the challenge. Finally, the judge should take a moment to explain to the team any observations made during judging and why they did or did not receive each point on their score sheet. Don’t worry about calculating final scores at this time. If any difficult questions arise during judging, refer to the Event Supervisor for a final ruling. Some teams will complete construction before the end of construction time. Judge them early if feasible.

Completion – After judging is complete, have teams pack all their remaining tools and materials into their boxes. Provide trash cans so teams can discard any used materials. Once clean up is complete, teams are free to leave. They do not need to leave anything at the competition site and may keep their devices. Final scores should now be tabulated and submitted to the competition authority.

Ensure that each judge is familiar with the above procedures to maintain the integrity and fairness of the event. With hard work and a little planning, Junkyard Challenge can be an organized and rewarding event to run.