Junior Solar Sprint

Host Guide

JR. SOLAR SPRINT

ARMY EDUCATIONAL OUTREACH PROGRAM

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The Army Educational Outreach Program is comprised of Army-sponsored research, education, competitions, internships and practical experiences designed to engage and guide students and teachers in science, technology, engineering, and mathematics (STEM) education. From elementary school through graduate school, students of all proficiency levels, interests, and economic and academic backgrounds are encouraged to participate in real world experiences involving these important disciplines. Visit *www.usaeop.com* for more information.

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Introduction

Congratulations on your decision to host a Junior Solar Sprint competition! While JSS challenges students to use scientific know-how, creative thinking, experimentation and teamwork to design and build and race high-performance solar electric vehicles, planning and hosting a multi-school JSS competition takes those skills to another level. By taking on the challenge of hosting a competition, you also will develop communication and problem-solving skills and will come away from the experience with the satisfaction of knowing that you helped introduce students to an exciting STEM opportunity.

A host site's responsibilities include inviting schools to participate, distributing pre-race materials, finding sponsors, managing registrations, recruiting and training volunteers, and managing race day details. This guide offers guidance for how to host a successful event, from the planning stage through evaluation. You will find a checklist of steps to take, sample forms, letters, and press releases, as well as sample race day materials. Additional resources can be accessed on the JSS website at *www.jrsolarsprint.org*. If you have materials that have worked for you that are different from what is supplied here, the national JSS office would love to hear from you. Consider sending us a copy so we can share your success with other host sites.

The key to having a successful race is organization. Used in conjunction with the official rules the guidelines and samples in this guide should help you to organize a terrific event. Good luck with your competition!

Setting Up a Planning Committee

One of the first things you will need to do is set up a steering committee to guide the planning for your race and get the work done. Include interested student leaders, teachers, parents, and community members on the committee. The committee should be comprised of the chairpeople of each of the sub-committees you set up. Sub-committees to consider establishing include:

- **Registration** includes setting up a registration process, creating a registration packet, handling incoming registrations, and handling check-in on the day of the race.
- **Marketing, Publicity & Public Relations** committee members will work with other committees to get the word out about registration, need for volunteers, need for funding, and so forth.
- **Fundraising** includes activities to raise money to pay for the event (see funding section) as well as record keeping of expenses and income.
- **Site Set-up and Decoration** includes everything from putting up tents for registration and hanging banners and signs to inflating balloons, making a judging grid, and making an attractive display of the trophies.
- **Volunteers** committee works to find volunteers for all the many tasks that need to be done on race day and schedules people to work shifts.
- **Judges** committee lines up people to be judges and coordinates training them and providing information on rules, judging criteria, etc.
- **Lunch & Concessions** committee determines how lunch will be handled and whether concessions will be on sale. If concessions are offered, this committee handles all the details of purchasing supplies and selling them the day of the race.
- **Event Photography** is an optional committee, but it is nice to have photographers document the event and provide candid as well as posed photos of participants.
- **Awards** committee members handle all the details of selecting and purchasing awards for the various categories you have decided on for trophies. This committee would also handle any other participation awards such as certificates, decals, or t-shirts.

Once your committees are in place, committee members begin working out the details and planning for the event. Use of a standardized Project Planning Form and a Task Assignment Sheet will be useful for committee members to keep track of the details of their plan.

Record Keeping

It's a good idea to get into the practice of creating a file for each committee and having committee chairs and members contribute to it. These records will be useful as you proceed with planning your JSS competition, and they will be especially helpful if you decide to host another competition in the future. Items that are in any way related to planning and carrying out the committee's work should be included, such as:

- A project timeline—when to do what
- Committee assignments and a breakdown of tasks to be completed
- Sketches of set-up directions for racetrack, registration tables, work areas, etc.
- Supply lists and sources
- Copies of purchase orders, contracts, correspondence, letters, memos
- Work order requests for custodial staff
- People involved and their contact information
- Samples of registration packet, publicity, race day program, judging forms, etc.
- Evaluation form that identifies problems encountered and recommendations for improvement.

Inviting Participants

Finding schools to participate in your Junior Solar Sprint is one of the most important parts of the planning process—if no one participates all your work will be for nothing. Determine if you want to host the event only for schools in your area or open it up to a larger range of schools. If your JSS is only for schools in your area, it will be fairly easy to contact local schools and invite their participation. If you want to open it up to schools in other parts of the state, follow these steps to find participants:

- Contact your State Department of Education for mailing addresses for schools in your state with grades 4–8.
- Contact the state science teacher's association and the state Technology Student Association with a media release about the competition and ask them to send it out to their members as an item of interest.
- Create a letter, postcard, or flyer that introduces the Junior Solar Sprint and invites schools to your website for further information. (See sample letter)
- Send the mailing to schools whose addresses you obtained from the Department of Education.

Registration process

Create a registration form to collect information from schools that plan to participate in your Sprint. You can use paper forms that schools mail in to complete their registration, or you can make use of web technology and have an online registration process. Sites such as WuFoo or Eventbrite offer free online registration tools that are easy to use.

Pre-event information

In addition to your introductory letter or postcard, you will want to create more detailed pre-event information for schools considering whether or not to participate. An effective way to provide this information is to create a free website using one of the free site creators such as Webnode or Wix with information about the race and how schools can enter, including a link to your online registration tool. Consider including the following information:

- Race format and rules
- Team Registration Form
- Parental Consent Form
- Student Medical Form
- Coaches Medical Form
- Photo Release Form – Student
- Photo Release Form – Coach
- Notebook requirements
- Car-building resources
- Award categories
- Race day schedule/agenda
- Directions and map of the area
- Contact information for local hotels for overnight stays
- Restaurants in the area

Registration confirmation packet

Once a school has registered, send them a confirmation packet of materials that includes some of the items listed above as well as:

- Sample judging forms for the award categories
- Lunch information
- Order forms for any race day mementos you're offering such as t-shirts or pennants
- Instructions for race day

Funding

Develop a Budget

To calculate how much funding you will need to host your JSS you must first estimate what your expenses will be. Consider all the areas in which you will incur expenses:

- Will there be rental fees for the site or equipment?
- Will refreshments be served or concessions sold? If so, figure costs for the food and drink and also cups, napkins, plates, etc.
- What marketing costs are involved? Will you need to print fliers, buy envelopes and stamps for a mailing, make programs?
- What signage and decorations are needed? List each item and its cost.
- What trophies or awards will be given? Factor in the cost of ribbons, trophies, decals, etc.
- How will you thank people who have helped with the event? The cost of a gift card, flowers, or a fruit basket for a faculty member who really helped, or small candy bars to accompany thank-you notes should be part of the budget.

Once you have calculated your expenses you will be able to set a fundraising target and make a plan for how you will raise the money. Three ways to do so are to solicit sponsors, seek a grant, or conduct a fundraiser.

Solicit Sponsors

Your community likely has businesses and organizations that would be supportive of your effort to host a JSS competition. To find them, follow these tips:

- Look for companies that have a connection to STEM (Science, Technology, Engineering, and Mathematics) or alternative energy. They have a vested interest in developing a pool of future employees who are qualified in STEM and alternative energy fields.
- Contact the Chamber of Commerce and ask for contact information of companies that might be interested in partnering with you.
- Check to see if there are any nonprofit associations in your area that have missions related to STEM or alternative energy development.
- Submit an article to local media describing what you are trying to do and asking businesses for help with funding.

When approaching a business or association for funding, know what you need and be specific about your request. If the potential sponsor can't donate money, ask for in-kind donations such as printing, t-shirts, lunch, and so forth. Be sure to indicate how the sponsorship will benefit the potential sponsor in terms of community visibility, developing a future workforce, etc.

Seek a Grant

Many people overlook grants as a source of funds because they are intimidated by the thought of applying for a grant. Don't be intimidated by the grant-writing process. Those who offer grants want to fund good programs. All you have to do is effectively tell them about your good idea and gain their support. Use these tips to help you shape your ideas in preparation for applying for a grant.

What is the goal of your project? Establish a clear mental picture of what your JSS event will accomplish, and make sure it is something that can be achieved and evaluated. What outcomes do you expect to achieve? List at least three specific things that will result from its completion (e.g., students will identify the parts of a solar car; students will be able to name three careers involving solar energy; the event will involve 300 students in a STEM experience).

Identify who will benefit. What group will this project serve (e.g., technology students, fourth through eighth grade students, students from your state)?

What activities will the project involve? Outline what you will do in consecutive steps, just as you do when you are planning any event. Make sure the activities relate to your project goals. Create a timeline reflecting what will be done, when it will be done, and who will do it.

Identify what methods you will use to evaluate the project. How will you measure the effectiveness of the JSS competition? How will you be able to demonstrate to the grant maker that you have achieved your goals? This part is very important to the funders for accountability purposes. They want to know whether their grant made a difference. This should relate directly to the goals you set at the beginning. Make the goals very specific and measurable.

Determine what your budget will be. Clearly explain to the funder how the money you are requesting would be used. Detailing amounts of money for specific items will show that you have done your research and aren't just asking for an amount without knowing how you will use it. Be sure to request an amount within the range they are willing to fund.

Select a promising funder. Businesses and foundations often choose a focus for their grant allocations. Make sure your project fits into that focus. If it doesn't, don't try to force a fit. See "Where Is the Money?" sidebar for possible sources of funds.

Draft your grant proposal. In some cases, foundations issue a request for proposals (RFP) that outlines their expectations for proposal content and format. Follow those guidelines precisely! In other cases, you may have to write without specific guidelines. In either case, keep it short (2–5 pages is ideal) and keep it simple.

Source: Excerpted from "Writing Grants for Activity Programs," Focus newsletter, Vol. 13 No. 5; Copyright © 2009 Leadership Logistics and Herff Jones, Inc. Used with permission.

Where Is the Money?

There are a variety of sources for grants to fund student activity projects. Local service organizations—Kiwanis, Lions Club, Optimists Club, Rotary Club, Knights of Columbus, and others—have a vested interest in helping the youth of your community succeed and are a good place to start. Many of them have a specific emphasis on youth programs. Some sources of information about grant opportunities include:

- Youth Service America: *www.servicewire.org/nsb/Grants-and-Awards*
- School Grants *www.k12grants.org/grant_opps.htm*
- The Chronicle of Philanthropy *http://philanthropy.com*
- The Foundation Center *http://foundationcenter.org/findfunders/*
- Gifts in Kind International *www.giftsinkind.org*
- Gannet Foundation *www.gannettfoundation.org*
- Rotary International *www.rotary.org/en/ServiceAndFellowship/FundAProject/Pages/ridefault.aspx*
- William Randolph Hearst Foundations *www.hearstfdn.org/grants_home.php*
- AT&T Foundation *www.att.com/foundation*
- Sprint Foundation *www.sprint.com/community*
- Verizon Foundation *http://www.verizonfoundation.org/*
- IBM Education Grant Programs *www.ibm.com/ibm/ibmgives/grant/education*
- NEA Foundation *www.neafoundation.org/grants.htm*
- Corporation for National and Community Service eGrants *www.nationalservice.gov/egrants/index.asp*

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Conduct a Fundraiser

Many schools rely on fundraising to finance the costs of hosting a JSS competition. If this is how you will raise the funds, it is a good idea to schedule fundraising activities throughout the year, rather than wait until just before the competition. An Internet search for "fundraising" or "school fundraising" turns up a plethora of sites that offer fundraising products and ideas online. Below is a partial list that may be helpful. This list is for your information. Being listed here does not imply endorsement from JSS.

www.fundraiserhelp.com

www.fundraising.com

www.fundraising1000.com

www.fundraisinghq.com

www.fundraisingproducts.net

www.fundraisingbeads.com

www.fundraisingexcellence.com

www.fundraisingweb.org

www.fundraisersoftware.com

www.fundsnetservices.com

www.justfundraising.com

www.leadershiplogistics.us/fundraising/

www.ozarkdelight.com

www.ptotoday.com/fundraising.html

www.thepizzapail.com

www.profitpotentials.com

www.schoolfundraisers.com

www.wowfundraising.com

Marketing Your Event

Getting the word out about your Junior Solar Sprint will involve two main efforts: recruiting participants to register and publicizing the event to the larger community.

Publicity for Participants

To market the event to potential participants, try some of the ideas listed in the "Inviting Participants" section of this guide. Creating a letter, postcard, or flyer that introduces the Junior Solar Sprint and invites schools to participate will be a key marketing item. Other ideas include:

- Take advantage of free website creator sites to build a website with information about the event. This website can be referenced in all publicity as a place for people to go for additional information and can easily be updated as new information becomes available.
- Follow up after you send the initial letter or postcard with email updates and reminders about registration deadlines. Once people are registered, set up a group for participants on a site like Remind101.com, Rememberthemilk.com, or Wiggio.com and use it to send text messages and reminders.
- Set up a Twitter account for the event and encourage participants to use the Fast Follow feature to receive tweets to their phones, even if they haven't signed up for Twitter. To use it, all people need to do is text "follow [username]" to Twitter's shortcode of 40404. From there, they'll start receiving all your updates via text message.

Public Relations

Develop a plan to ensure that your event will receive media coverage. Some ideas in this area include:

- Send out a media alert with the basic facts about your JSS—who, what, where, when, and why—and invite reporters and photographers to attend. Send this out at least a month in advance of the event. Follow up a week before the sprint.

Getting Media Coverage

Media outlets continually face requests from countless individuals and organizations to devote news coverage to specific happenings in the local community. Here is a checklist of newsworthiness characteristics that will help you decide how your story rates on the news scale:

- **New Information:** Is it something the public doesn't already know? Example: member award winners, new programs, and what your chapter is doing to solve a problem.
- **Timeliness:** Does it relate to something that is happening now, or will be happening soon? If you pay close attention to national news stories, you can connect your story with a national cause/event. Know your media deadlines so that you can get them the information they need, when they need it.
- **Significance and Scope**: Does it affect the lives of large numbers of local residents?
- **Human Interest:** Is it a compelling story—one that will hold people's interest? Will the story relate to people on an emotional level?
- **Uniqueness**: Is there a unique angle on the story—something that makes it special and unexpected?
- **Relevance:** Does the story relate to an important issue facing the community and its residents?

Of course, every story doesn't have to meet every one of these qualifications, but the more you can tailor your story to accepted standards of what is news, the better your chances of getting it in the media.

Excerpted from Brand FCCLA materials available at www.fcclainc.org.

- Put together a sample media release (see Appendix D) that participants can use to send to their local media publicizing their efforts in the JSS. A press release is essentially a one-page article about your event that can include quotes from event organizers and includes more detail than a media alert. Think of it as a way to write the article for the reporter. Provide your sample release to all participants and encourage them to fill in their information and send it to their local papers and community news sites like Patch.com. Or, collect names and addresses for the local newspapers of the participants when they register and send the press releases yourself.

Selecting a Site

When selecting a site for your competition, be sure to select one that is not in shadow at the time your races will be conducted. A site visit at the same time of day that the race will be held before you finalize your decision is recommended. Remember that shadows will be different in the spring than they are in the fall.

The track should be a hard flat surface, such as a tennis court or a smooth-surfaced running track with a wide area around the perimeter for race officials and spectators. The race lane must be 60 cm wide and 20 m long. The surface should be as smooth as possible, flat and level or slightly downhill in the direction of the race. It should be oriented so that prevailing winds are behind the cars to avoid problems with crosswinds.

In addition to the racing surface, plan for a staging area near the starting line for racers who are "on deck" and a separate "pit" area to help facilitate quick repairs to cars between races, as necessary. The pit area should have two practice guide lines. You will also need work areas for check-in and inspection of cars; adequate parking; a place for students to eat lunch; easy access to restrooms; and a place for the awards ceremony. Sites that have been used for competitions include running tracks, basketball and tennis courts with adjacent grandstands, the top level of a parking garage, parking lots, and open space on college campuses. You will also need to have a contingency plan in case of rain.

Timing the Races

Determine what kind of timing device you will use for the time trials. A system in which volunteers with stop watches stand at the end of each lane to record times is one method that can be used. If you use stop watches, have two or three timers per lane and take the middle time of three or the average of two times as the official time.

An electronic timing system in which each car's time is recorded as it touches a backstop at the finish line will give you accurate times. Electronic timers are often available for rental. If you can't find one, check with your local Cub Scout pack to see what they use for their Pinewood Derby. If it's an electronic system, see if you can make arrangements to borrow it.

Getting Ready for Race Day

Volunteers

Hosting a Junior Solar Sprint competition is a labor-intensive undertaking. You and your committee members will put in months of work leading up to the event, and will need the help of additional people to make the day run smoothly. Start recruiting people months in advance to ensure you have enough help on race day.

Each of the sub-committees you established as part of your planning committee will be responsible for recruiting volunteers to manage all their tasks. List all the tasks that need to be done to get set up for the event and for race day itself. Calculate the number of volunteers you will need to accomplish all the tasks and make a list of what each volunteer position will be responsible for. Positions that will likely be needed include:

- **Judges:** Judges are needed both to oversee the running of the races and to evaluate entries for the various award categories, including judging the supporting notebooks for each entry.
- **Judge Coordinator:** This person is responsible for welcoming the volunteers who will serve as judges and orienting them to what is expected of them. Provide name tags, clipboards, judging forms, and pens and provide hospitality throughout the day. Work with the scorekeeper to finalize first, second, and third place in each design award category and get the information to the award ceremony volunteer.
- **Site Decoration:** This includes everything from putting up tents and making sure each one has a table and chair(s) under it to helping hang banners, inflating balloons, and making an attractive display of the trophies and awards that will be given out.
- **Registration:** The job at the registration table is to check schools in, check the teams' registration information, make corrections as needed, and hand out pre-assembled folders to the students who pre-registered to be at the Sprint. If there are any on-site registrations, these will also be handled at the registration table.
- **Signage:** These volunteers are responsible for making and hanging signs for each of the different stations (registration, repair, lunch, on deck area, etc.), banners thanking sponsors, restrooms, and any other signs that are needed. You will also need a large bracket poster to keep track of race outcomes, as well as a raceboard (see photo on page 13) on which you will list the car numbers of cars who are "racing," "ready" to race, and "on deck." You may want to contact your local vocational technology schools and ask them to create the raceboard and other signage. Students work on the design in class; you pay for the supplies. Don't forget to include logos from your sponsors.
- **Volunteer Coordinator:** This person maintains a master list of who is volunteering and what they are supposed to be doing. When volunteers arrive, they check in at a volunteer registration table for a nametag and instructions.
- **Inspection Check:** Volunteers in this position ensure that students' cars follow the rules and are of regulation size. Provide measuring devices, writing utensils, copies of the inspection form that lists inspection requirements, and small dot stickers to adhere to the car once it passes inspection.
- **Statistician:** The statistician's job is to assign cars to races throughout the day and place cars on the elimination bracket as cars drop out of the running. Statisticians are responsible for recording information from the cars' heat sheets and keeping track of which cars are in each round. An assistant or two to arrange the heat sheets according to race and hand them out to students would be helpful.

- **Scorekeeper:** This volunteer's job is to collect the score sheets from the judges and input the scores into a spreadsheet program on a laptop. The scorekeeper will tabulate the winners in each category and coordinate with the award ceremony volunteer to ensure the winners receive their recognition.
- **Announcer:** This volunteer announces the races as well as makes general announcements and keeps participants aware of the day's schedule. The announcer plays a big role in setting the tone for the day, so select someone who is vivacious, has a good speaking voice, and is experienced with using a microphone. Someone who is flexible and able to adapt to changing circumstances is also a good idea.
- **Race Board Manager:** This volunteer is responsible for setting up the race board and keeping it updated with car numbers for upcoming races. (See photo on page 13.) Fill out the spaces on the race board to let the teams and audience know which car number is in which lane for the present race (RACING), the next race (READY), and the one after that (ON DECK). A "Round & Race" sheet from the statistician will provide accurate information for this. (See Appendix H.) This job requires vigilance and accuracy.
- **On Deck Manager:** This volunteer organizes the students who are getting ready to race in the upcoming race. The on deck manager gets a list of car numbers and heat numbers from the statistician and directs students to their proper lanes, then reports any missing entries to the start line manager.
- **Start Line Manager:** This volunteer collects heat sheets from students and verifies that the racers are present and in their proper lanes. He or she confirms that cars are hooked onto the guide line and that catchers are in place at the finish line. He or she gives the final okay to the announcer to start the race.
- **Track Monitor**: This volunteer serves as the track guard and keeps people outside the designated track area. Only students competing in a heat should be at the track's start and end. One student can start the car and one can catch the car at the finish. Do not let the students take the cars from the finish line until times are recorded on their heat sheets and the winners are noted.
- **Lunch/Refreshments:** Your decision whether or not to provide lunch will determine what needs to be done here. You should have someone in charge of organizing hospitality for your judges and volunteers. A water station where participants and volunteers can refill water bottles also is a good idea.
- **T-shirts:** Someone needs to coordinate details of t-shirt distribution or sales, if you are offering a shirt.
- **Photographer:** This is an optional position, but it is a good idea to set up a photo spot where teams can get their photo taken holding their car. Record the names of the people in each photo so you can use them later to publicize the winners. A second photographer could be used to take candid photos of the races and participants throughout the day—making repairs to their cars, setting cars on the track, catching them, cheering each other on, checking out exhibits, and so forth. Be sure to have a photographer take photos of all the winners and identify who they are for captions.
- **Exhibit Coordinator:** If you are having any displays or exhibits from local businesses or organizations—perhaps a sponsor or a company with information on STEM or solar power—you will need someone to coordinate the details of setting up those displays.
- **Award Ceremony:** This person handles the details of setting up a podium, chairs for dignitaries, a script for the awards, and so forth.

Volunteer Training

Arrange a time well in advance of race day to train your volunteers. Get them together to go over the

logistics of the day, then break down into smaller groups of people who have the same or related jobs to go over specific details.

On the day of the event, have volunteers check in with the volunteer coordinator so you know who is there to help. This also provides an opportunity to go over any last-minute details.

Site Set-up

Early on race day, have your site decorations and signage crews get to work setting up each of the areas needed for the day. Set up tables, chairs, and tents as needed for the following designated areas:

- Registration/check-in
- Car inspection
- Judging
- Car repair table
- Lunch/Concessions
- Awards display
- Statisticians and scorekeepers table
- Exhibits (optional)
- Photo backdrop

Track Setup & Test

Set up and test your track the day before the race, if possible, so you have time to work out any glitches. Lay out the materials for the track according to the official rules and regulations. The number of lanes you set up will depend on the space available, total number of entrants, and time available. Each heat takes about five minutes. Each lane must have a guide wire to which cars will be attached for steering. The guide wire will be no more than 1.5 cm from the surface of the track. It can be made of 40- to 60-pound test monofilament fishing line or something similar. Keep the guide lines guitar-string taut and be sure they are securely anchored. These guide wires are hard to see, so security roping should be set up around the perimeter to protect the track and participants. Sweep the track before the race to clear it of any debris.

Communications

You'll need to be concerned about communications to race participants and with raceday volunteers.

PA System

The success of your event will depend in part on whether or not people can hear instructions from an announcer. Be sure to make arrangements for a public address system for announcing the race heats and to keep the competition moving. The venue you are using might have its own sound system, but if not, check into renting or borrowing a portable sound system to use for the day.

Cell Phones and Walkie Talkies

It will also be important for your committee members and volunteers to be able to communicate with each other throughout the day. Cell phones are ubiquitous these days, so distribute the cell phone numbers of all your key people to enable them to text and call each other as needed. You might also find a system of hand-held, portable, two-way radio transceivers (commonly known as Walkie Talkies) to be useful. The two-way radios enable everyone who has one to hear the conversation going on and respond if appropriate. Key people on your committee should carry one so they can be easily reached.

Race Day Management

When the big day arrives, there are many details that need to be taken care of to make sure the event proceeds smoothly.

Registration/Check-In Packet

On race day, schools will need to check in and receive a packet of materials that will let them know what is expected and how the event will proceed. Items to put in the packet include:

- **Agenda/Program:** A printed program that includes the schedule for the day as well as any acknowledgements that need to be made of sponsors, volunteers, judges, organizers, etc. See Appendix E for a sample schedule.
- **Certificates of Participation:** Include in each school's packet a certificate of participation personalized with each team member's name. These make nice mementos for student scrapbooks.
- **Heat Sheets:** Include a heat sheet for each entry on which the car's times from each heat will be recorded. (See Appendix G.)
- **Name tag** for each student and coach/advisor
- **Lunch ticket** (if appropriate)
- **Map of the facilities**
- **Media release** that schools can use to fill in their own information and forward to local media
- **Evaluation form** or a sheet inviting participants to take an online evaluation survey.

Team Photos

Recruit volunteers to staff a station where school teams can stop by to have a group photo taken and individuals can be photographed with their cars. Post these photos online after the race for access by participants. They also will come in handy for press releases about the winners after the event.

Repair Table

Set up a repair table to facilitate quick repairs to cars, as necessary. Teams must supply their own tools, but provide an electrical outlet for plugging in glue guns. Give priority at the table to teams that are scheduled to race in the next race. Limit the time at the table for repairs to three minutes. Repairs of cars are NOT permitted during the time trials or finalist or racing of the cars.

Structure of the Competition

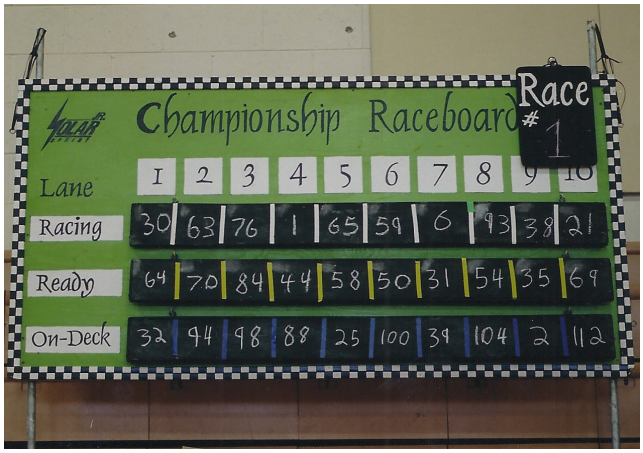
Car check-in procedure

Every car must be inspected before it can compete. The model car must meet the specifications described in the official rules. At check-in, assign each car a unique number; that number will be used to identify it for time trials and final races. Provide each car with a heat sheet on which the car's times from each heat will be recorded. (See Appendix G.)

Race Rules

All cars meeting safety and performance criteria will be given three time trials. The average time of the three time trials will be used to determine the top 16 finalist cars that will participate in the finalist races. Cars that are disqualified for any reason will not be permitted to participate in the finalist races.

For the finalist races, the top 16 cars compete in single or double elimination racing process. As the event coordinator, you will determine whether the final races will be conducted in a single or double elimination process. Refer to the Race Bracket for 16-Car Double Elimination page in the official rules for a sample bracket and specifics on conducting the races. When setting up the heats, be sure to assign each car to different lanes for its heats so that a vehicle does not consistently race in



A race board indicating which cars are "racing," "ready," and "on-deck" will be helpful in keeping your races running smoothly.

the same lane. Also, mix up the cars comprising a heat so that they do not race against the same cars every race. (Check Appendix H for Rounds Sheet.)

Race Logistics

Follow the instructions in the official rules for running the races. You will find a raceboard similar to the one shown in the photograph above to be essential in getting everyone where they need to be at the proper time. When a car number is listed in the "on-deck" row, teams with vehicles in that row should move to the on-deck area. Solar panels need to be on the vehicle at this point. The cars in the "ready" row should have their heat sheets in hand and be lined up to go on to the track in lane order. It's helpful to have a judge check the cars at this point to ensure they have their inspection sticker and car number. The judge will collect each entry's heat sheet and note any no-shows.

Those who are in the "racing" row will be the only ones on the track, waiting for the announcer to start the race. A runner should take the heat cards from the judge and take them to the timers or judges at the finish line for times to be recorded. Each student will set his or her car behind the start line, turn on the motor and shield the sun from the car's solar panel by using a cover. The Lead Judge will signal the start, the students remove the cover over their car, and the race begins.

Judging

As the race organizer it is your responsibility to recruit judges for the Sprint. The Junior Solar Sprint is both a design and a performance event. In addition to lane judges who will officiate during the races themselves, you will need design judges to evaluate entries in four areas: 1) display, 2) notebook, 3) artisanship and engineering of the model, 4) model's racing performance. Judges may inspect cars at any time before, during, and following timed trials. See official rules for specifics on judging.

Award categories

Some optional special awards to consider awarding include:

Best Re-Use of Materials Award—given to the car that creatively incorporates already-used materials in its design and construction.

Kids' Choice Award—provide a voting ticket to each student who attends your Sprint and have them cast their votes for their favorite car (not their own).

Artistic Merit—given to a car that has extra artistic flair or has outstanding visual appeal.

Team Spirit—awarded to a team that demonstrates special group spirit, enthusiasm, courtesy, and good sportsmanship as a group e.g., a song, dance, cheer, special attire.

Posting Race Information

Find an area to hang poster-sized brackets and keep them updated throughout the day with results of the races. This will enable participants to have an additional place besides the raceboard to obtain information about when their car is scheduled to race.

Lunch and Concessions

Decide whether or not to provide lunch or concessions during the competition. Points to consider include:

- How long will the competition last?
- Do you want to provide lunch or have participants provide their own?
- Considering your race location, can participants reach restaurants in a timely manner?
- Are there picnic tables for participants who bring their own lunches and coolers?
- Can you raise the money to provide lunch/concessions? Will a sponsor provide lunch?
- Do you want to offer a concession stand where participants can purchase drinks and snacks?

Whatever you decide, be sure to communicate with the schools so they know whether or not to bring their own lunches.

T-shirts and Giveaways

If funds permit, design and order t-shirts for participants. You can give them away if you've found a sponsor (remember to include the logos of all your sponsors on the shirt) or offer them for sale. The shirt will serve as a great keepsake for participants and will help publicize your race to their peers back at their schools, which will heighten interest for next year's race. If shirts aren't an option, consider decals, bumper stickers, keychains, cups, or pens.

Award Ceremony

The culmination of the day's events will be the awards ceremony. This is a great opportunity not only to recognize the winners of the races and design categories, but also the folks who made the event possible. Consider including the following items when planning your awards ceremony agenda:

- **Volunteer Recognition:** It is important to acknowledge the army of volunteers who contributed to the event, both for their own gratification and so the participants realize what a big effort the event took. One way to do this without taking a lot of time is to have all the volunteers who are present line up and quickly parade in front of the podium waving to the crowd.
- **Advisor/Coach Recognition:** Another group who should be thanked with at least a round of applause is all the advisors and coaches who worked with the teams to bring them to the JSS competition. Without these people putting in extra time and effort, the competitors wouldn't be there.
- **Sponsor Recognition:** Invite your sponsors to your JSS event and be sure to recognize them at the award ceremony. Present sponsors with a plaque, framed photo, or certificate recognizing their vital participation. Have everyone show their appreciation with a rousing round of applause.
- **Award Trophies in Categories:** Finally, give the winning teams their moment in the spotlight by awarding the trophies in various categories.

A highlight of the day for many students will be the recognition they receive at the Awards Ceremony where tropies are awarded.

Evaluation

It's important to take the time to evaluate the success of your Junior Solar Sprint, both in terms of how well your planning committee worked and how well the end result was perceived by participants. Design an evaluation form that you include in the registration packets and ask participants to complete it before they leave. Offer an incentive for turning it in—if you are giving away a free t-shirt or other memento, require the evaluation form as the "ticket" to get the giveaway. An alternative would be to create an online survey with SurveyMonkey or WuFoo and email a link to the survey to the school's advisor to complete after the event.

After the event is over, ask all your committee chairs and key volunteers to complete an evaluation to assess what went well and what should be improved if you host this event again. See Appendix H for a sample evaluation form. Save the evaluations for next year's committee chairs in the folder created for each committee at the start of the planning process (see Record Keeping).

Post-Event Follow-Up

A few details that should be followed up on after your JSS is over include:

- Assemble a good file with all the evaluations and other items listed in Record Keeping so you won't have to start from scratch next time you host a JSS.
- Write thank you notes to all the people who helped, especially committee chairs and sponsors.
- Post event photos online to be shared with participating schools.
- Touch base with the schools that participated thanking them for their participation and providing a link to an online site where you've posted photos from the event. Ask them to forward on any ideas they have for improvement of the event, now that they've had a while to think about it.
- Send a media release with photos to area news outlets detailing the results of the event.
- Celebrate the end of a successful event with your team!

Appendix A: JSS Host Checklist

- ❑ Form a steering committee to guide the planning for your race and get the work done. Include interested student leaders, teachers, parents, and community members.
- ❑ Set up sub-committees as needed to handle various aspects of the planning.
- ❑ Select a location for your Junior Solar Sprint.
- ❑ Determine a date in May or June for the competition that doesn't conflict with major school events such as athletic or music competitions. Select a rain date in case of bad weather.
- ❑ Contact your State Department of Education for mailing addresses for schools in your state with grades 4–8.
- ❑ Contact the state science teacher's association and the state Technology Student Association with a media release about the competition.
- ❑ Create a registration process using an online registration form like Eventbrite, WuFoo, or another free registration tool.
- ❑ Create a free website using one of the free site creators such as Webnode or Wix with information about the race and how schools can enter, including a link to your online registration tool.
- ❑ Post a link to your site on the JSS website.
- ❑ Create a letter, postcard, or flyer that introduces the Junior Solar Sprint and invites schools to your website for further information.
- ❑ Send the mailing to schools whose addresses you obtained from the State Department of Education.
- ❑ Create a registration confirmation packet of materials for schools that register.
- ❑ Set up a Twitter Fast Follow account to send out race updates.
- ❑ Develop a budget for the event.
- ❑ Set up an accounting system to record school entries and keep track of income and expenses.
- ❑ Determine how you will handle lunch on the day of the race, i.e., sack lunches or concessions? Develop a plan to handle lunch details.
- ❑ Recruit volunteers to help with race day activities.
- ❑ Obtain sponsors for your competition to cover costs of lunches, t-shirts, awards, signage, program printing, racetrack materials, scoreboard, and so forth.
- ❑ Get a camera-ready logo from any sponsors for use on a banner, race-day program, and t-shirts.
- ❑ Look for grants from local service organizations and others that could help defray the costs of hosting the Sprint.
- ❑ Write a sample press release for participant schools.
- ❑ Send a media alert to local media and invite them to cover the event.
- ❑ Copy items needed for registration check-in packets and assemble packets for each school.
- ❑ Draft an agenda for race day.
- ❑ Make arrangements for a color guard unit to present the flag at the opening ceremony.
- ❑ Make arrangements for a performance of the national anthem at the opening ceremony.
- ❑ Make arrangements to obtain all materials needed to set up the racetrack.
- ❑ Determine what kind of timing device you will use and make arrangements to obtain an electronic timing device, stopwatches, or whatever else is needed.
- ❑ Make arrangements for a public address system to announce the race heats and keep the competition moving.
- ❑ Make arrangements to use a set of hand-held, portable, two-way radio transceivers (Walkie Talkies)
- ❑ Determine how you will compile race statistics: spreadsheet and computer?
- ❑ Make arrangements to obtain or rent all the equipment you will need for the day: tables, chairs, tents, stopwatches/timers, helium tank, portable restrooms, etc.

JSS Host Checklist—continued

- ❑ Consider electrical needs on race day and how they will be accommodated
- ❑ Design and create banners and signs for race day
- ❑ Design certificates of participation and print them for each school's check-in packet
- ❑ Place orders for trophies, plaques, or ribbons for the winners
- ❑ Create and make copies of judging forms
- ❑ Create poster-sized bracket sheets for posting race information
- ❑ Plan the awards ceremony
- ❑ Create an evaluation form for participants
- ❑ Create a cell phone list of key people and distribute it to volunteers
- ❑ Create a volunteer schedule for race day
- ❑ Create detailed instruction sheets for each volunteer position
- ❑ Organize a volunteer training session well before race day
- ❑ Write and send thank-you letters to all sponsors and volunteers after the event
- ❑ Send a media release with photos to area news outlets detailing the results of the event.
- ❑ Assemble a file of information for reference next time you host a JSS
- ❑ Celebrate the end of a successful event with your team!
- ❑
- ❑
- ❑
- ❑
- ❑
- ❑

Appendix B: Sample Invitation

Dear Educator:

The U.S. Army Educational Outreach Program, Technology Student Association, and [Host Organization] invite students in grades four through eight at your school to participate in a Junior Solar Sprint (JSS) competition in [your town] on [date].

Participating in Junior Solar Sprint provides a hands-on opportunity for students to apply Science, Technology, Engineering, and Mathematics (STEM) concepts, creativity, and problem-solving skills as they design, construct, and race solar-powered cars. Participants use their imagination and ingenuity to construct vehicles powered by a standardized solar cell and motor and compete against their peers. Teams are judged on car speed, supporting evidence of their design, artistic merit, and craftsmanship. Awards will be given for design in addition to the track event itself.

For more information on the location, race details, contest rules, and construction resources, visit our website at [http://www.yoursiteaddress]. For additional resources, visit the national JSS website at http://www.jrsolarsprint.org/

We are proud to host this Junior Solar Sprint competition and hope your school will join us in this unique and fun event. To register, visit our online registration tool at [http://www.yoursiteaddress]. The deadline to register is [date]. If you have questions, contact [JSS Coordinator's Name], Race Coordinator, at [phone number and email address] or visit our website.

We hope to see you at the competition on [date].

Sincerely,

[Name of Contact Person]

JSS Race Coordinator

Appendix C: Sample Sponsor Letter

Dear [Potential Sponsor],

[Host Organization] has invited students in grades four through eight from [our state/school district/region] to participate in a Junior Solar Sprint (JSS) competition in [your town] on [date]. JSS is a national program that was developed to provide a hands-on opportunity for students to apply Science, Technology, Engineering, and Mathematics (STEM) concepts, creativity, and problem-solving skills as they design, construct, and race solar-powered cars. We hope you will consider being a part of this exciting event.

Approximately _____ students, teachers, and competition volunteers from [#] schools will take part in this event. This will be an excellent opportunity for your [business/organization] to show its support for STEM education and gain visibility in the communities from which participants will come. Would you be willing to partner with us by sponsoring a t-shirt for each of the participants [or lunch/signage/cost of printing/cost of solar kits/whatever else is needed]?

Corporate sponsors are vital to the success of this competition and will be given prominent recognition for their generosity and support. Please take the time to review [our website/enclosed materials] for more information on this exciting opportunity. We would very much appreciate any support you would be willing to provide for the Junior Solar Sprint. I will follow up with a phone call in the near future. Thanks for considering this request.

Sincerely,

[Name of Contact Person]

Appendix D: Sample Media Release

For information contact:

Host Site coordinator or

Company Public Relations Office

[phone & email contact info]

[Event City and Date] — Students from [your school] will compete against students from [our state/school district/region] in a Junior Solar Sprint (JSS) competition in [your town] on [date]. JSS is a national program that was developed to provide a hands-on opportunity for students to apply Science, Technology, Engineering, and Mathematics (STEM) concepts, creativity, and problem-solving skills as they design, construct, and race solar-powered cars.

Each Junior Solar Sprint team is required to design and build a model car no larger than 30 cm x 60 cm x 30 cm. The cars must be powered by sunlight using a solar photovoltaic cell that converts the sun's energy into electricity. Students must consider such critical factors as aerodynamic drag, rolling resistance, weight, and drive train when designing their cars for speed and reliability. The race is a double elimination competition with awards going to the fastest [#] cars. Awards also will be given in design categories including [list your design awards].

"Students have an exciting opportunity to apply the scientific concepts they are learning in class to a real-world challenge with Junior Solar Sprint," says Lynda Haitz, national program manager for JSS at the Technology Student Association. "Kids develop teamwork and problem-solving abilities, investigate environmental issues, gain hands-on engineering skills, and use principals of science and math to get the fastest, most interesting, and best crafted vehicle possible," she said.

This event starts at [time], on [day and date], at [place of race]. Races will begin at [time] and the awards ceremony will take place at [time]. The Junior Solar Sprint program is sponsored by the U.S. Army Educational Outreach Program and is managed by the Technology Student Association. The Army Educational Outreach Program is comprised of Army-sponsored research, education, competitions, internships and practical experiences designed to engage and guide students and teachers in science, technology, engineering, and mathematics (STEM) education. Visit *www.usaeop.com* for more information.

A list of schools participating in the Junior Solar Sprint follows.

[List schools and city they are from. This news release can be sent to the media in your area as well as the media in the areas of the schools that are participating.]

Appendix E: Sample Race Day Agenda

Structure your race day so there is a designated time for each element of the competition. A sample order of events is:

8:00 a.m. – 10:00 a.m.	Registration, Car Inspection, and Race Assignment
8:15 a.m. – 11:30 a.m.	Design Categories Judging
	Team Photos
10:00 a.m. – 10:20 a.m.	Opening Ceremony
10:30 a.m. – 12:30 p.m.	Time Trials
12:30 p.m. – 1:00 p.m.	Lunch Break
1:00 p.m. – 2:30 p.m.	Finals Racing
3:00 p.m.	Awards Ceremony

Appendix F: Sample Judging Forms

Junior Solar Sprint Inspection Checklist

Car Number _____ School _____

_____ Car length not greater than 60 cm

_____ Car width not greater than 30 cm

_____ Car height not greater than 30 cm

_____ Original solar panel (not modified)

_____ Eyelet on bottom of car near front

_____ Original motor (not modified)

_____ Structurally sound body shell without solar panel

_____ 3-cm square space available for car number

_____ At least one wheel driven by motor

_____ No radio control device

_____ No batteries or energy storage device

❑ Passes Inspection ❑ Fails Inspection

Signature of Inspector _____

Participant/Team ID# _____

JUNIOR SOLAR SPRINT ON-SITE COMPETITION

2013 OFFICIAL RATING FORM — GRADES 4 THROUGH 8

Model (40 points)

The model is safe to participate in the time trials and, if deemed appropriate, the finalist races. ___Yes ___No
The model meets all required specifications. ___Yes ___No

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points	Record scores in the column spaces below.
Evaluators: Using minimal (1–4), adequate (5–8 points) or exemplary (9–10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the far right.				
Display	The quality of the display is extremely poor and/or exceeds size requirements.	The display is adequately created and meets the size specifications.	The display is exemplary, includes eye-catching details and meets the size specifications.	
Design Quality	The design of the solar model is poor and shows little effort.	The design of the solar model is adequate, but not of exceptional quality.	The design of the solar model exhibits exceptional quality of design.	
Design Creativity/ Originality	The solar model car design lacks creativity and originality. No effort was made in this area.	The solar model car design demonstrates an adequate level of creativity and originality.	The solar model car design shows exceptional creativity and originality in its design.	
Construction Quality	The solar model car lacks quality of construction	The solar model car demonstrates adequate quality of construction.	The solar model car demonstrates exceptional quality of construction.	
			SUBTOTAL (40 points)	

Comments:

Regulations and Documentation (60 points)

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points	
Notebook components See Regulation A	Several of the notebook components are missing.	The notebook is present, but some of the components are missing. The notebook lacks overall quality.	The notebook includes all required components. The notebook is neat and properly organized. Effort and quality are evident.	
Project log	The project log is lacking significant portions. If present, it is messy and it demonstrates lack of effort.	The project log is acceptable, but some information is missing.	The project log is complete and accurate. The presentation is neat and orderly. A great deal of effort was made.	
Design drawings	Some drawings are missing and are of poor quality.	Drawings are acceptable. All required views are shown.	Drawings are accurate and complete. All required views are present. Rough sketches are included.	
Design Details/ Components List	Several details of the model including size, weight, wheel size, and gear ratio are missing and/ or are poor. Component list is missing.	Some details of the model including size, weight, wheel size, and gear ratio are missing. Some components are missing.	All details of the model, including size, weight, wheel size, and gear ratio are present. All components are included.	

Appendix G: Sample Heat Sheet

Junior Solar Sprint Competition

Car # ____________

Code: ____________

School: ____________

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Junior Solar Sprint Competition

Car # ____________

Code: ____________

School: ____________

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Junior Solar Sprint Competition

Car # ____________

Code: ____________

School: ____________

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Junior Solar Sprint Competition

Car # ____________

Code: ____________

School: ____________

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Race # ____ Lane # ____

❑ No Loss ❑ 1 Loss ❑ 2 Loss

Round _____

Race #_____	Race #_____	Race #_____	Race #_____	Race #_____
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9
10	10	10	10	10

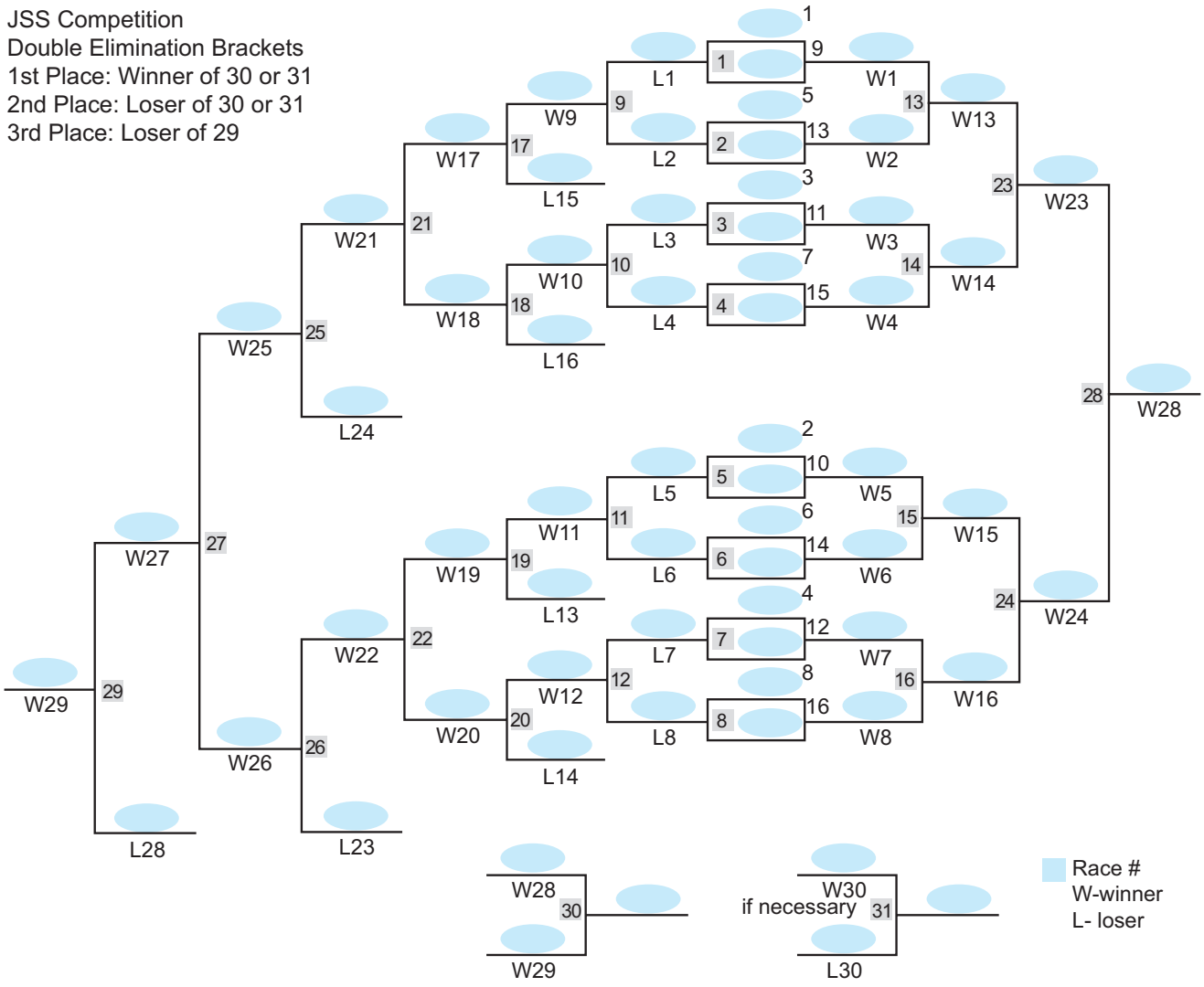
Race #_____	Race #_____	Race #_____	Race #_____	Race #_____
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9
10	10	10	10	10

JUNIOR SOLAR SPRINT COMPETITION
TIME TRIALS

Entry ID#	Time Trial 1	Time Trial 2	Time Trial 3	Average Time	Rank

RACE BRACKET FOR 16-CAR DOUBLE ELIMINATION

JSS Competition
Double Elimination Brackets
1st Place: Winner of 30 or 31
2nd Place: Loser of 30 or 31
3rd Place: Loser of 29



Appendix I: Contest Evaluation Form

Junior Solar Sprint Competition Evaluation

What was your role in this project? _____

Brief Description of What You Did:_____

_____

_____

How would you rate the success of this project? ❑ Outstanding ❑ Good ❑ Needs Improvement

How many volunteers are needed to do your committee's work to organize this project? _____

Attach a sheet listing the expenses incurred for this project. Total expenses: _____

When should planning begin? How much time is needed to prepare and carry out this work? _____

_____

_____

What problems did you encounter in planning this project and how were they resolved?_____

_____

_____

List the aspects of the project that you would do again: _____

_____

_____

List the aspects of the project that should be changed or improved next time it is held: _____

_____

_____

Other comments or suggestions for future chairs of this event:

_____

_____

_____

Attach a list of all people, businesses, or groups who need thank-you notes.

Attach additional information such as supply orders, work requests for custodians, receipts, programs, planning sheets, worker duties, announcement requests, and so forth that may be helpful to the next chairperson of this project

Evaluation completed by: _____