Avenues in Motion

Improving Community Transportation Options

Video Journal Rules

Spirit of the Sprint

https://avenuesinmotion.org/environmental-education/junior-solar-sprints/

Junior Solar Sprints (JSS) offers students the opportunity to learn by means of a friendly competition against their peers. Students design, construct and race a model solar powered vehicle. The role of the educator is to nurture the spirit of excitement and the joy of discovery and learning that awaits students. Educators should let students assume the responsibility for decisions, building and overall performance.

Videos are collected as your team's submission for consideration of becoming a Junior Solar Sprints Finalist. Finalists will be invited to an in person race day where they will compete for top scores in Engineering, Craftsmanship, Upcycled Materials and Speed. Please see the Junior Solar Sprints Rules .pdf for more information regarding the Speed category. The exact date of the in person race day is announced on the website.

Materials and Vehicle Specifications

1. The Ray Catcher solar panel sold by Pitsco is the official solar panel to be used for this race. No homemade panels or other commercial panels can be used. Panels are loaned to schools and must be returned after competition. Solar panels are Avenues in Motion's (AIM) property. In the event you lose your panel, you must pay back AIM the retail value of the panel, $38. You are allowed to purchase your own panels, but they must be the Pitsco Ray Catcher, product ID W37942. Only 1 solar panel per vehicle is allowed. The solar panel can't be part of the structure of the vehicle. It must be easily disconnected from the vehicle as solar panels are shared.
2. The motor provided by AIM must be the only motor used in the vehicle design (Pitsco, motor 280, product ID 54428). Motors may not be rewound or disassembled. Only 1 motor per vehicle is allowed.
3. **No energy storage devices may be used in conjunction with the solar panel.** The vehicle should demonstrate its movement under battery power and solar power individually.
4. The vehicle must be a student team's own design and manufactured from the current school year. **No vehicle or major component from a previous year will be allowed to compete.** Solar panels, motors and other individual parts may be reused in a new design.
5. The name of the vehicle/team name must match registration paperwork submitted. The name on the paperwork is what we use to create the judging score sheet. If the name is changed, the vehicle will not be scored.

Video Submission

1. Teams can consist of 1 to 4 participants max. Participants must be middle school students (6^{th}-8^{th} grade) or children ages 11 – 13. (Contact Kristen if you have questions about mixed aged/grade groups.)
2. Videos must be shared using Google drive. If you have any issues with this sharing platform you must let AIM know well in advance to ensure your video is scored.
3. Videos must be 2 to 3 minutes in length. Points are associated with concise videos. Videos will score lower if they go under or over that length. Videos that are grossly over the time limit will be rejected for submission.
4. The Registration form must be completed by end of April (see JSS website for exact date). This information on this form and the information in the submitted team video must match (team name most importantly).
5. Videos must be submitted by sharing with ktomasicchio@avenuesinmotion.org using Google drive. If you have any issues, you must let AIM know in advance so we can resolve them in a timely manner. You should test your sharing settings in advance of the due date to avoid any delays in submissions. See JSS website for exact due date

Continue to page 2 for how to use the rubric. Continue to page 3 for the official rubric.

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How to Use the Rubric

A rubric is a tool to help explain expectations. The Junior Solar Sprints competition isn't just about how to make the fastest car. By building a model car, you have learned several topics at once: engineering-design, solar energy, creative expression and team building. So, it is quite the task to figure out how to judge all these choices, all the same, across all the entries, in a given year. This rubric helps our judges determine points awarded across several categories:

Solar Energy | Craftsmanship | Engineering | Upcycled Materials | Video Journal

But these categories don't exist alone. It's best to use this rubric as a matching tool. To be clear, when we say Row we mean the horizontal boxes across (Category), and column we mean the vertical boxes down (Points). For example, if your team recorded time and distance of your car on battery and solar, those are experiments. Where do we see the word experiment used? Under the Video Journal row. So, by doing those time and distance experiments you have gotten points for showing your car moving on battery and solar (under Engineering row) and for doing experiments (under Video Journal row).

Another example could be that you decided to use old CD's for wheels, which you found at home or at school. You guessed they could work well, tried them out, made adjustments so the wheels matched your car's overall design or theme, and found these to be the best wheels! How does that work out in points? You would get points for being resourceful and inventive (Upcycled Materials row), and you would get points for explaining how you decided these were the best wheels (Video Journal row).

Lastly, let's say you created a car that is designed to run best on solar. How did you get there? Maybe you tested different gears (Engineering row), tried lighter materials (Upcycled Materials row), and researched the Apparent Motion of the Sun (Solar Energy row). When researching the sun's movement, you found out more about solar panels and the push for green energy (Solar Energy row). In your video you and your team clearly explain the many steps your group took to get a final, fast, solar powered car (Video Journal row). So you would get points in Engineering, Upcycled Materials, Solar Energy and Video Journal.

By combining different categories, you are more likely to receive more points and then more likely to be invited to compete in person at Finals! So, as much as we'd like to check all the boxes, you may need to compromise. Look at your design and final build. Where did you and your team spend the most time? Was it hunting for the best materials? Was it measuring the angles of the sun? Was it testing out gear combinations? Was it coming up with a creative theme and making your car look super cool? Then, you can go to this sheet and see if you are making (or made) choices that will get you points. If you aren't, maybe go back to the drawing board, use this sheet as your guide and make adjustments. Don't forget that we keep all previous Junior Solar Sprint videos on our YouTube. So to see what teams have done in the past, go to https://www.youtube.com/@AvenuesinMotion/playlists . Then scroll down for whichever year you want to check out. You can use these as inspiration but make sure your video is 100% original. Be mindful to stay true to your group's voice and creativity.

Please remember to enjoy the process, even when it gets frustrating. As James Joyce said, "Mistakes are the Portals to Discovery."

We wish you the best of luck and have fun!

For more information, questions or comments please email Kristen Tomasicchio at ktomasicchio@avenuesinmotion.org or check out our Junior Solar Sprints website: https://avenuesinmotion.org/environmental-education/junior-solar-sprints/

Please continue to page 3 for the Rubric.

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Points	0 – 1	1 – 2	2 – 3	3 – 4	4 – 5
Solar Energy Explanation	Little to no explanation of solar power or importance of sustainable energy	Minimal explanation of solar energy and solar panel. Minimal mention of solar energy as future energy source	Decent explanation of solar energy and solar panel. Discussed experimentation (did not show tests or results in video) with the solar panel. Decent explanation of importance of solar energy for low Carbon future	Clear understanding and explanation of solar energy, solar panel. Showed in the video tests of the panel that could improve panel performance like the time of day or angle. Clear understanding of solar energy as sustainable energy source for low/no Carbon future	Superior understanding and explanation of solar energy, solar panel. Showed in the video tests or results of experiments on the panel that could improve performance. Superior explanation of solar energy/solar panels as sustainable energy source for low/no Carbon future
Engineering & Design Explanation	Little to no explanation or understanding of electrical connections, chassis design or chassis materials, or gear ratios. No footage of car moving with battery or solar power.	Minimal effort to explain: electrical connections from solar panel/battery pack to motor, chassis design or gear ratios as way to increase speed or distance. Some footage of car moving on battery, but doesn't move on solar	Decent effort to explain: electrical connections from solar panel/battery pack to motor, chassis design or gear ratios as way to increase speed or distance. Car moves with both battery and solar, but moves faster/easier with battery	Clear understanding of electrical connection, chassis design and gear ratios. Showed in video experiments or tests with electrical connections, chassis design or gear ratios. Showed the car moving with battery and solar.	Superior explanation of electrical connections, chassis design and gear ratios. Showed in video tests or results of experiments on chassis design, electrical connections, gear ratios that improved car performance. Showed the car moving well under battery power but also showed the car moving best with solar power.
Material Choice Explanation	No mention of material choices.	Minimal effort to explain material choices, consideration of weight, re-use post-race or recyclability	Decent effort to explain material choices in consideration of weight, re-use post-race or recyclability. Material choices were somewhat resourceful	Clear understanding and explanation of material choices in consideration of weight, re-use post-race or recyclability. Material choices showed some ingenuity. Showed some raw materials and finished outcomes in video.	Clear understanding and explanation of material choices in consideration of weight, re-use post-race or recyclability. Material choices were very resourceful and very skillfully used. Showed all raw materials and their finished outcome in video
Overall Video Journal	No regard for 2-3 minute time limit Presented little to no research on above topics. No creativity	Video was over/under 2-3 minute time limit Video was not at all concise with presenting research on above categories. Some creative video choices	Video somewhat met 2-3 minute time limit. +/- 30 or so seconds. Video was able to somewhat present/explain research on above categories, video was somewhat clear on above topics. Made creative choices that helped the video stand out.	Video was within 2-3 minute time limit Above average effort to present knowledge, experiments & trial & error, above average clarity on explanation of above topics, above average creativity that enhanced overall video quality and made the video stand out.	Video was within 2-3 minutes Superior effort to present knowledge, experiments & trial & error on above topics, near perfectly clear explanations on above topics, superior creativity in video creation that enhanced the overall video quality and made for an unforgettable video