

Junior Solar Sprints 2023 Rubric

Category	Points 0 – 1	1 – 2	2 – 3	3 – 4	4 – 5
Solar Energy	Little to no explanation of solar power or solar panel placement on the car.	Minimal explanation of solar energy. Minimal explanation of the solar panel placement on the car.	Decent explanation of solar energy and solar pane placement. Some experimentation with the solar panel. Decent explanation of importance of solar energy for low Carbon future.	Clear understanding and explanation of solar energy, solar panel. Multiple experiments with the panel (like time of day or angle) and how those change speed or movement. Clear understanding of solar energy as sustainable energy source.	Superior understanding and explanation of solar energy, solar panel. Complete experiments with explanations and application to final car design. Superior explanation of solar energy/solar panels as sustainable energy source.
Craftsmanship	Little to no apparent theme or design plan, not attractive, sloppy execution.	Minimal effort towards theme or design plan, somewhat attractive, not well executed.	Decent effort towards theme or design plan, mostly attractive, mostly neat presentation, shows decent amount of work and skill.	Clear theme or design plan, inclusion of blueprint/drawing, above average attractiveness, neat presentation and execution, above average work and skill, quality build.	Supremely clear theme or design plan, inclusion of blueprint/drawing, superior attractiveness, neatness and execution, superior work and skill, superior quality build.
Engineering	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 for speed or distance. Video shows the 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 for speed or distance. Video shows the car in motion under battery and some solar power.	Clear understanding and explanation of: electrical connections from solar panel/battery pack to motor, chassis design or gear ratios for speed or distance. Video shows the car in motion under battery power but focuses on movement under solar power.	Superior understanding and explanation of: electrical connections from solar panel/battery pack to motor, chassis design or gear ratios for speed or distance. Video shows the car in motion under battery power but the car moves the fastest under solar power.
Upcycled Materials	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 were inventive and original.	Clear understanding and explanation of material choices in consideration of weight, re-use post-race or recyclability. Material choices were very resourceful, inventive and very skillfully used.
Video Journal	No regard for 2-3 minute time limit Presented little to no research on above topics. Video was very unclear.	Video didn't make good use of time. Video was not at all clear with presenting research on above categories.	Video was somewhat clear and met 2-3 minute time limit Video was able to somewhat present/explain research on above categories, video was somewhat clear on above topics, somewhat creative.	Video was clear and within 2-3 minute time limit. Above average effort to present research, experiments & trial & error, above average clarity on explanation of above topics, above average creativity in video creation.	Video was clear and accurate, within 2-3 minutes. Superior effort to present research, experiments & trial & error on above topics, superior clarity on explanation of above topics, superior creativity in video creation.

How to Use This Document

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 would be 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), you would get points for having a clear theme (Craftsmanship 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 Solar Energy, Upcycled Materials and Video Journal.

By combining different categories, you will be 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.

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/>