

THE REINVENT THE ROVER WHEEL CHALLENGE RULES

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Open-Ended Skills Challenge

The “Reinvent the Rover Wheel” challenge is an open-ended skills challenge which does not offer a prize, however entries in this challenge will be displayed in the gallery and certain exceptional entries (as determined by NASA) may even be marked in the gallery with “NASA gold stars”. Your participation in this Challenge is governed not only by these Challenge Rules BUT ALSO by the [GENERAL RULES](#), which are incorporated herein.

The Challenge

We want you to reinvent the wheel - literally! Use your creativity to come up with a rover wheel design that you think would best explore Mars. Create a digital 3D model of your reinvented wheel and submit your design along with an image of the 3D model and a short description of your entry. While digital 3D models are encouraged, young inventors in Grades K-5 can opt to provide an image of a sketch or prototype instead of a 3D model.

NASA’s Perseverance rover has six wheels made of aluminum designed to drive across sandy, rocky, and hilly Martian terrain. The new and improved tire treads, or [grousers](#), were designed by NASA-JPL engineers to be a series of slightly S-curved lines. This approach builds on the lessons learned from NASA’s previous rovers - Sojourner, Spirit, Opportunity, and Curiosity. Spirit for example, got [stuck in a sandy area](#). Curiosity’s wheels are still going strong, but are starting to show [wear and tear](#). And this is just Mars! NASA Glenn engineers are looking back to lessons learned from exploring the moon to design new [metal spring tires](#) made with a shape memory alloy, and NASA has previously developed prototype rovers like the [ATHLETE](#) rover with multi-function wheels.

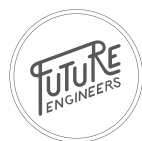
There is much more Mars exploration to come - from returning Mars samples to Earth and looking onward to sending astronauts. There is no doubt many more rovers headed for the red planet, so we want to know your creative ideas for traversing across Mars! Check out the EDUCATION RESOURCES section for more info on rover wheels and design considerations like wheel size, tread, material, and more.

Submission Criteria

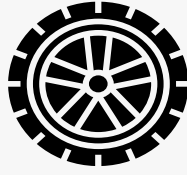
Submissions that violate the rules may be flagged for resubmission or rejected.

- Your Submission Must Include:
 - IMAGE of your ROVER WHEEL DESIGN
 - GIF, PNG, JPG/JPEG, BMP, SVG: Max 3 MB
 - NAME of your ROVER WHEEL DESIGN
 - Maximum 30 characters
 - SHORT DESCRIPTION explaining your entry
 - Maximum 150 words
 - 3D MODEL - Optional for Grades K-5
 - STL File: Max 20 MB
- Do not upload content that substantially features third party logos, tradenames, or that otherwise may infringe on the rights of others.
- Your entry must be made by YOU.
- Keep it G-rated! No inappropriate content.
- LIMIT ONE eligible entry per student.

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Privacy Rules

Submissions will be reviewed for online privacy and student safety prior to being displayed in the gallery. PLEASE DO NOT include any identifiable information such as your face or name in your entry. Entries that moderators find to be objectionable or otherwise inappropriate, or that are noncompliant, for example that contain personal information, may be flagged for resubmission or rejected. For example:

- NO NAMES OF PEOPLE! Don't write your name, or anyone else's name in your entry.
- NO PHOTOS WITH FACES! Don't include the face of yourself or others in your image.
- NO ADDRESSES! Don't tell us where you live or upload a photo with your address shown.
- NO SCHOOL NAMES/ADDRESSES! Don't include your school name in your submission.
- NO CONTACT INFO OR USERNAMES! Don't include any phone numbers, email addresses, usernames, or other contact information in your submission.
- NO LICENSE PLATES! Don't include a photo with a license plate.

Who Can Enter

Legal residents of the United States who are registered students in grades kindergarten through twelfth grade attending a public, private, or home school during the 2019-2020 academic school year in the United States (including U.S. Territories or Possessions and schools operated by the U.S. for the children of American personnel overseas) are eligible to enter (eligible "Participants"). Student interns and children of employees of Future Engineers ("Sponsor") are not eligible to enter.

Program Dates

The open submission period starts on or about June 25, 2020 at 9:00 AM Pacific time and closes on **July 30, 2020** at 11:59 PM Pacific time.

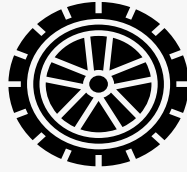
Ownership and Public Licensing

Entries will be displayed in a moderated public gallery. Featured or exceptional entries may but without obligation be acknowledged in the challenge gallery. Once submitted, an entry may not be cancelled or deleted and will not be returned, if applicable. Entries may not be acknowledged and will not be received or held "in confidence" or "in trust" and by submitting an entry it does not create a confidential relationship or obligation of

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secrecy between Participant and Future Engineers or NASA. Participants understand, recognize and accept that, without fault of Future Engineers, NASA or other Participants or persons may have provided Future Engineers and/or NASA or others, or made public, or may in the future submit or make public, information, ideas or materials that are the same or similar to Participant's entry. As a condition of entry, Participants grant Future Engineers and NASA (including their respective authorized representatives) a perpetual, irrevocable, world-wide, royalty-free, and non-exclusive license to use, reproduce, publicly perform, publicly display and create a derivative work from, any entry in whole or in part that Participant submits to this Challenge (including but not limited to the 3D design and/or image or any part thereof, or ideas, concepts, know-how, or techniques submitted as part of or in connection with the entry) for any purpose. Participants agree not to assert moral rights, or rights of attribution in connection with any such use of their entry. Participants will not now or in the future be entitled to any approval, rights of compensation, or any other payment. Please refer to the GENERAL RULES and TERMS OF SERVICE for licensing details.

Sponsor and Challenge Parties:

Sponsor: Future Engineers LLC

Challenge Party: NASA - National Aeronautics and Space Administration



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