



STEM LEADERS OF THE FUTURE: ENGINEERING AND GEOSCIENCE CONTEST

CHALLENGES

Choose **one (1)** of the following challenges, read the prompts and start developing plans for your invention. Please note that your invention does not need to provide a solution for all the questions in the challenge. Your invention does however need to be a completely new invention and can't be a new use for an existing product.

SUSTAINABILITY

As a society it's crucial that we continue reducing waste and take steps to better care for the planet.

What kind of invention would...

- Make buildings or transportation methods less harmful to the environment?
- Re-purpose food waste into other products?
- Build more products with less material?
- Reuse electricity in creative ways?

Your challenge is to use your understanding of the importance of sustainability in our everyday lives to come up with an invention that would make being sustainable easier.

ENVIRONMENTAL RESPONSIBILITY

When we talk about the environment, we include everything in the world around us that influences our lives. This includes oxygen, water, food, shelter, and warmth – the five basic needs of human beings. These basic needs are being threatened due to extreme changes in our environment that have a huge impact on the health of our planet.

What kind of invention would...

- Clean up our oceans and forests for animal inhabitants?
- Make drinking water cleaner for people around the world?
- Ensure breathable air for people in all communities?

- Produce energy in ways that are less harmful to the environment?

Your challenge is to create an invention that enables others to be more environmentally responsible in their everyday lives.

HEALTH

It's a strange time living during the COVID-19 pandemic. COVID-19 is just one of many different health issues that scientists are currently researching and learning more about to prevent illness and help heal people in need. As a Kid of the Future, you are tasked with figuring out how to help increase the health in your community and beyond.

What kind of invention would...

- Improve the way medications are administered?
- Track the origin of diseases and identify commonalities?
- Effectively communicate doctor prognosis to patients with disabilities, limitations, or other challenges?
- Prevent young children from accidental injuries?

Your challenge is to create an invention that helps to solve a health concern or assists in keeping others healthy.

CLIMATE CHANGE

The Earth has been warming up significantly over the last 100 years due to an increase in the use of oil, gas and coal to power our homes, cars, factories, etc. and increases CO₂ in the atmosphere. This as a result has changed the climate of our planet, effecting not only ourselves, but also ocean currents, weather patterns, and has impacted animal and plant species.

What kind of invention would...

- Improve filtration systems for air, water and other natural resources?
- Ensure breathable air for people in all communities?
- Provide clean electricity to underdeveloped countries?
- Make airplanes, cars, and trains run more cleanly?

Your challenge is to use your knowledge of the effects of climate change and create an invention that helps your community and people across the globe reduce the amount of carbon dioxide added to the atmosphere.

STRUCTURAL SOCIETY

When you look around a city, you can see many aspects of civilization: buildings, roads, and things under our feet, like water pipes and sewer systems. Engineers work together to design ways for society to function and travel from one place to another without many difficulties.

What kind of invention would...

- Connect traffic and safety priorities of a city with the mobility of vehicles more effectively?
- Improve mobility with technology in a unique way?
- Make city infrastructure more compatible with smart technology?
- Reduce the amount of energy used or needed in homes and office buildings?

Your challenge is to create an invention that helps to improve an aspect of society whether it's shelter, transportation, or something else with the perspective of building a smarter and stronger structural society.

SPACE

Did you know that the footprints from the very first moon landing in 1969 will be there for next 100 million years? Space is so vast with trillions of trillions of objects moving around one another in the universe, and since 1969, we've come a long way in our knowledge of space.

What kind of invention would...

- Improve the quality of food astronauts consume in space?
- Track the physical changes of the earth from space in real time?
- Create launches that are less harmful to the environment?
- Provide protection against extreme environments?

Your challenge to use your knowledge of space and come up with an invention that helps astronauts in space or uses facts from space explorations to help better your community and beyond.