

2026 STEM Design Challenge



United Nations Sustainable Development Goal 12: [Responsible Consumption and Production](#)

Eco-Factory: Build a Sustainable Production Machine:

In this challenge, elementary and middle school students will design a section of a factory that produces a product using sustainable practices by preparing a prototype constructed of K'Nex and/or Engino, that showcases how their functioning machine works, and how it supports environmentally responsible production.

The machine prototype should clearly demonstrate sustainability principles by minimizing waste, maximizing efficiency, and/or simulating the use of recycled, reusable, or otherwise sustainable parts, materials, or resources.

Teams may choose to incorporate recycled or reused materials into other aspects of the model outside of the K'Nex/Engino prototype, such as background settings, factory signage or products, or visual representation of sustainable resources to highlight environmentally responsible thinking and enhance the model's commitment to sustainability.

Competition Rules:

A team of 2-4 students will work together on the project.

Prototype Materials: K'Nex and/or Engino (up to 1400 pieces.)

String, tape, and rubber bands are permitted. 3D printed pieces are NOT allowed.

Supplementary Materials: (Optional) Recycled or reused materials may be incorporated into other aspects of the model outside of the K'Nex/Engino prototype. See challenge.

Teams are responsible for bringing their materials to the competition. There can be no pre-constructed components. Teams will have 2 hours to recreate their project for judging.

Projects must fit on a 6-foot-long table. Water may not be used as part of the display.

Each team will need to create and submit a design notebook and a blueprint for viewing at the competition.

Each team will need to prepare a presentation (2 minutes or less) on their model and how it answers the challenge.

For more information, visit our [STEM Design Challenge](#) website.

Design Notebook

- This should be a journal of the team's progress from start to finish.
- The Notebook should include elements of the Engineering Design Process.
- [Resources for Design Notebooks](#)

Blueprint

- A blueprint is a technical drawing or design plan for a project. It is used to represent the final product.
- Blueprints for the STEM Design Challenge can be a drawing, cad drawing, online sketch, etc. Be creative!
- [Resources for blueprint ideas](#)

Prototype

- Teams will answer the challenge by creating a prototype of their idea using K'Nex and/or Engino.
- Teams may include a backdrop or artwork, but judges will not consider this in their scoring.
- Projects must fit on a 6-foot-long table. Water may not be used in the display.