

# NASEF 2021 DIGITAL RUBE GOLDBERG MACHINE MINECRAFT CONTEST



Students in grades 3-12 are challenged to create a team and build a digital Rube Goldberg Machine in Minecraft Education.

This contest is free to enter and includes Minecraft Education Edition, plus prizes for winners!

The digital Rube Goldberg machines should complete a simple task in the most fun and overly complicated way possible.

In Minecraft creative mode, youth first learn how to create working simple machines: Lever, Wheel and Axle, Inclined Plane, Wedge, Pulley, and Screw. Then they string those simple machines together to create a wacky chain-reaction contraption.

Video tutorials from Minecraft education experts help students learn how to build each of the simple machines using Minecraft, so teachers and parents don't have to be Minecraft experts.

Students can choose to enter preseason practice rounds; the final Big Build will be unveiled in January 2021, providing details of the specific machine to be created by all participants. There are categories for Junior, Senior, and @Home/Family teams.

***This creative digital contest does not require in-person meeting or building, so it is a perfect way for students to learn hands-on STEM skills despite restrictions due to COVID-19.***

Rube Goldberg Machine Contests inspire communication, problem-solving and teamwork while honing skills like math, physics and chemistry. What separates a Rube Goldberg Machine Contest from other chain reaction competitions is artistry, storytelling, and a sense of humor.

Learn more at [NASEF.org/learning/rube-goldberg/](https://www.nasef.org/learning/rube-goldberg/)

## Standards Mapping

### ISTE Standards

#### 3 Knowledge Constructor

Students build knowledge by actively exploring real-world issues and problems, developing ideas and theories, and pursuing answers and solutions.

#### 4 Innovative Designer

4a Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

4c Students develop, test and refine prototypes as part of a cyclical design process.

4d Students exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.

#### 5 Computational Thinker

5c Students break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.

5d Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

#### 6 Creative Communicator

6c Students communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.

### Next Gen Science Standards

#### Motion and Stability: Forces and Interactions

MS-PS2-1 Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.

#### Energy

HS-PS3-3 Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.

#### Engineering Design

HS-ETS1-2 Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

### Interdisciplinary and 21st Century Connections

This contest covers areas related to engineering, science, and multimedia design. It integrates all areas of STEM / STEAM.

#### 21st Century Connections:

1. Critical thinking
2. Creativity
3. Collaboration
4. Communication
5. Technology literacy
6. Flexibility
7. Leadership
8. Initiative
9. Social skills



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