



a program of The Academy of Applied Science

Important Highlights

- Regional Invention Convention will be held Sunday, **March 31, 2019**.
- Regional Event Registration will close in late February, early **March**.
- Registration fee for Regional Invention Convention participants to cover the cost of food, t-shirt, etc. will be \$25 per inventor.
- Invention Category Winners may be eligible to move on to the [National Invention Convention and Entrepreneurship Expo](#), which is May 30-June 3rd this year in Dearborn, MI at **The Henry Ford Museum**. Please note that the National event does not have a Rube Goldberg invention competition, so those students will not meet eligibility criteria for Nationals.
- **The 2018-2019 Challenge – FUNventions! Inventing the next hit TOY! Do you have an idea for a new toy or gadget? Now is your chance to invent it!**
- **Online registration** – Online registration for the Regional Competition will be sent to teachers direct and on the AAS website. Schools can send up to 3 winners/winning teams in each participating Grade Levels (First in General Invention, Challenge, and in the Chain Reaction Invention strand) -- typically one winner in each category per up to 50 students in program.
- A reminder that schools will be responsible for securing judges for their School Invention Conventions and communicating clearly to those judges about their event dates, etc. Judges can be from industry, the school, or town community. They are typically given Rubric Score Sheets that indicate what they should be looking for, and you should prepare your learners to be able to talk about their invention and its use. Typically 1 judge per 10-15 students is most effective. We will notify you of additional industry judges that may want to attend your event. It will be your responsibility to communicate the date of your event to us and to help facilitate information about your school event getting to judges.
- Only 2 students will be allowed per INVENTION team.** This is in line with many of the invention and science events throughout the country. **Note that up to 4 students** are allowed on **Chain Reaction Invention teams**.
- **Display Board, Entry Form and Invention Logs**– Students will still be required to use a 3 panel **DISPLAY BOARD** for their project. A sample display board can be found on www.aas-world.org/YIP/index.html. **Student name/labeling the invention.** Please have the child's name written on the back of the poster. Entry Forms and Invention logs will continue to be a requirement so students have them on the day of competition. There is a new Invention Log that the National competition uses that we are able to recommend for use in the Regions, we still offer our Invention Log which is geared more for Grades K-3 and suggest that Grades 4-12 use the National Log—but this is up to the discretion of the teacher.

Congratulations on Bringing the Inventive Spirit to your classroom!

You might ask, “With everything else I have to teach, why take the time to teach inventing?”

Teaching invention in the classroom encourages students to think through problems, analyze, ask questions and support decisions—these are 21st Century skill sets that need to be developed in today’s learners. We are confronted every day with problems demanding solutions in our world. How those problems are solved is often determined by whether we have the skills to tackle them. It is also project-based learning and the future of the world of work is project-driven—it is a great way to introduce projects to your classroom!

Inventing provides a unique opportunity for learners of all ages to synthesize and apply knowledge and skills to real-life. The process places a strong emphasis on defining an actual problem, formulating an original solution, developing a product, and sharing the results or products with others. A unit on invention challenges students to become actively engaged in the learning process. The invention process provides an opportunity for all students to participate and be successful. All children can identify problems in their homes or neighborhoods. Students quickly discover the fun in providing practical solutions to the unique problems that matter to them.

A unit on inventive thinking and creating an original invention is limited only by the imagination of the students, teachers and parents.

Research has shown that introducing learners to the invention process will:

- ❖ Stimulate and foster creative thinking.
- ❖ Enhance self-image and build self-confidence.
- ❖ Develop the essential skills of logical thinking, creative problem solving, intellectual risk-taking, and communication.
- ❖ Relate the scientific method to real life.
- ❖ Spark the inventive spirit of innovation in the culture of our youth.
- ❖ Provide a sense of ownership to a student’s learning.

Students will also:

- ❖ Develop higher-level thinking skills.
- ❖ Integrate information from various subject-areas into project-based learning.
- ❖ Use creative and critical thinking skills.
- ❖ Solve problems of their own choosing.
- ❖ Use Information Literacy and other research skills.
- ❖ Learn to document the design-thinking process.
- ❖ Conduct Model-Eliciting-Activities (MEAs).
- ❖ Experience success and increased self-esteem.
- ❖ Produce an original invention and receive recognition for participating in the invention process.
- ❖ Acquire early public speaking and technical writing skills.

HOW TO GET STARTED

The Young Inventors' Program is a great way to integrate project-based learning into your classroom. Teachers, who have first-hand experience in how the program is incorporated into the classroom or after-school program, are available to provide teacher-to-teacher training and assistance if necessary. We have also started a Facebook Group and Twitter account for the Young Inventors' Program that we would love for you to join. You can ask questions, share materials, etc. via this social media tool. There is also an online training workshop offered through the NH Department of Education's Moodle site for online learning-- OpenNH.



- Use specific classroom scenarios
- Explore practical implementation of an invention unit
- Plan a school or classroom Invention Convention science fair

7-week course examines useful reflective strategies, hands-on learning approaches, and the application of Project-Based Learning (PBL) concepts via action planning.

Next session Fall 2018: October 7 - November 27

Learn more & register at
<http://nheon.org/opennh/courses/courses-aas>

- Program materials and additional resources can be found the Academy's website www.aas-world.org. In addition to event and registration materials.

LEARNER TIMELINE

This is a guideline only – the school, teacher and student should determine the appropriate tasks and time table according to how the school would like to implement the program as well as individual classroom or student needs.

(On-line **Regional Competition** registration typically opens in December and the Regional Invention Convention date is in late March.)

- Week 1**
- Keep an Inventor’s Journal that documents your process.
 - Brainstorm problems that might be solved with an invention. Interview others about what problems they face and what they might need.
 - Choose a problem to be solved.
 - Look for similar inventions and identify how your invention is unique.
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- Week 2**
- Plan how to solve the problem; List ways to solve the problem in the Inventor’s Journal.
 - Choose the best solution to the problem.
 - Sketch ideas and if necessary, design a proto-type in the Invention Log.
 - Collect up-cycled and recycled materials to help you brainstorm design and conduct your build.
 - Begin constructing a model.
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- Week 3**
- Test the model and improve, as needed.
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- Week4/5**
- Complete the model (we encourage it to be a working model, but it does not need to be).
 - Prepare your display board.
 - Prepare and practice oral presentation (3 minute limit).
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- Week 6/7**
- Present invention to class and/or School Invention Convention

Inventions – Students are selected as winners to attend and compete in the Regional Invention Convention.

During event registration TEACHERS will select which SPECIALTY AWARD CATEGORIES winners are entered into, so please discuss with your school winners.

Rube Goldberg® Inventions - Students are also selected to attend and compete in the Regional Invention Convention.

CHALLENGE - Students are selected to attend and compete in the Regional Invention Convention.

Team members are limited to two (2) students. Ties are accepted.

JUDGING AND AWARDS

The judging process is an important component of the Regional Competition. Judges are assigned to each grade level to evaluate each invention and to ask pertinent questions of the inventor.

General Category Inventions are judged on the following:

Originality/Usefulness –

- Does the invention represent an original and creative thought?
- Is the invention a novel or unique solution to an identified problem?
- Does the overall presentation of the invention reflect creative or original work?
- Does the invention have marketable value?

Written Description/Presentation –

- Does the content of the written description clearly express the purpose of the invention and how it accomplishes its purpose?
- Is the written description complete and appropriate for the inventor's grade level (the inventor's journal?)

Model/Illustration -

- Is the illustration complete, with all parts neatly labeled, and is a clear attractive, visual explanation of the invention (display board)?
- Is the model an accurate replica of the idea?

Research Performed –

- Was time and effort given to see if this invention had already been invented?

General Categories

Judges **may also** select one invention from each grade level for the following awards:

- ♦ Best in Grade
- ♦ Environmental
- ♦ Special Needs
- ♦ Fun and Leisure Time
- ♦ Practical and Useful
- ♦ Original and Unique
- ♦ Most Marketable

Challenge – Real Fun! Inventions that Take you Away from Screens!

Inventions are judged on the following:

Originality/Research Performed –

- Does the invention represent an original and creative thought?
- Is the invention a unique solution to **this challenge problem**?
- Does the overall presentation of the invention reflect creative or original work?
- Does the invention have marketable value?

Written Description/Presentation –

- Does the content of the written description clearly express the purpose of the invention and how it accomplishes its purpose?
- Is the written description complete and appropriate for the inventor's grade level (the inventor's journal?)

Model/Illustration -

- Illustration complete with parts neatly labeled, clear, attractive, visual explanation.

CHAIN REACTION INVENTIONS

If your learners are having a hard time coming up with a new idea for an invention—have them consider working on a Chain Reaction Invention! Chain Reaction Inventions make a simple task complex. Unlike a conventional invention that helps solve a problem—the chain reaction inventions are meant to complicate an easy task! The materials used are often the most important component of the machine. Students should be encouraged to use items around the house, i.e., raid an old toy chest, use broken appliances that need repair, etc. The machine must use a certain number of individual steps to complete an assigned task. It should use 4-6 serial reactions via simple machines at least once: wheel & axle, inclined plane, lever, pulley, screw or wedge. A minimum of 6 steps is required to complete the task. You may have seen this [GoldieBlox commercial](#) featuring a very clever chain reaction invention.

Chain Reaction Inventions are divided into two groups:

- ◆ Individual projects
- ◆ Team projects (limited to 4 students per team)

Chain Reaction Inventions are judged on the following:

Simple Machines –

Is there evidence of 4 simple machines used at least once: wheel & axle, pulley, inclined plane (includes screw or wedge) and or lever?

Construction/Complexity –

Does the construction match the design (diagram or display board)?

Is it safe and reasonably well constructed?

Does the task use at least 6 steps?

Written/Oral Presentation –

Is there a detailed diagram with tasks describing each stage (at least 6 steps labeled neatly in order?)

Oral description of steps and knowledge of the mechanics of simple machines.

Successful completion of task in one or two tries.

Creativity –

Creativity and overall appearance of the completed contraption and the task it accomplishes (Extra complexities)

Dependent on Regional entries in a given year, judges **typically select** one Chain Reaction Invention from each grade level for the following awards:

- ◆ Original and Unique
- ◆ Best Team Effort
- ◆ Best Individual Effort
- ◆ Most Complex

Inventors' Choice Award - Student inventors are asked to view all the other inventions (**but must remain with their invention during their designated judging period**). With ballots they receive at registration, they may vote for their favorite General Invention, Challenge and Chain Reaction Invention.

POTENTIAL SPECIALTY AWARD CATEGORIES

The Academy is grateful for the continued award sponsorship from many individuals, organizations and corporations.

In addition to General category inventions, Challenge and Rube Goldberg(r), inventions can be geared toward any of the sponsored specialty award categories listed below. Please encourage your students to consider these areas when brainstorming a problem to solve.

Caring for Your Pet

Innovation

Electric

Medical

Technology

Inventor Choice

Out-of-the-Box Thinking

Sustainability/Environmental

Service

Engineering/Design

Disruptive Technology

****All awards are subject to change without notice and are awarded at the discretion of the judges****

What is sustainability?

Sustainability is based on a simple principle: Everything that we need for our survival and well-being depends, either directly or indirectly, on our natural environment. Sustainability creates and maintains the conditions under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic and other requirements of present and future generations. Sustainability is important to making sure that we have and will continue to have, the water, materials, and resources to protect human health and our environment.

What categories are considered sustainable?

Projects can fall into a variety of categories from energy, agriculture, medical, environmental protection or social. The goal of the project should be to either improve on an existing service or create a new service that uses sustainable items or helps reduce waste.

It is important to note that sustainable projects do not have to be physical items. The inventions can also be ideas and concepts. It is important that if the idea is a concept, all steps must be thought through and clearly labeled.

What are some examples of sustainable projects?

- Recycling: Litter less Lunch!
- Solar heating and electricity production.
- Replacing nonrenewable fuels with a sustainable fuel source
- Something that improves the quality of life (social sustainability)
- Cleaning up our water supply
- Agriculture: How to improve the soil and how we grow our food
- Reducing the amount of trash going into our landfills
- Keeping toxic materials out of landfills, e.g. batteries, prescription drugs, paints etc.

How to motivate your students!

Encourage students to look at sustainability in a different way. It's not just about alternative energy but about improving our quality of life. Sustainability can be found in many different areas that we normally don't think about such as social sustainability and agricultural sustainability.

Electric Awards - Awards are given to the inventions that involve the use of electric phenomenon and technology.

1. There are 3 Electric Awards;
1st place - \$75 value; 2nd place - \$50 value and 3rd place - \$25 value
2. The Electric Awards are independent of other awards and may be awarded to an invention that receives other invention awards. All inventions using electrical components will be considered.
3. Some portion of an invention should involve the use of electrical phenomenon and technology, including but not limited to the following (as well as other electrical electronic, magnetic, electrochemical, electro-optic or electro-acoustic items):

motors	batteries	antennas	generators
magnets	relays	switches	instruments
solar cells	resistors	capacitors	fiber optics
lights	coil	computing elements	
4. The invention must incorporate appropriate safety measures.
5. The invention may be practical, impractical or a Rube Goldberg Machine.
6. In evaluating an invention, the judge should factor in the inventor's grade level and factor out non-child inventor participation.

Electric awards may be judged on the following:

- Variety of electrical component types
- Number of electrical components
- Electrical complexity
- Inventor understanding of the electrical principles and operation of the invention

Medical Award – Awards that solve a health-related problem. Medical awards may be judged on the following:

Originality –

- Does the invention represent an original and creative thought?
- Is the invention a novel or unique solution to an identified **health-related** problem?
- Does the overall presentation of the invention reflect creative or original work?

Usefulness –

- Does the invention solve a **health-related** problem or need?
- Does the invention have marketable value?

Written Description/Presentation –

- Does the content of the written description clearly express the purpose of the invention and how it accomplishes its purpose?
- Is the written description complete and appropriate for the inventor's grade level (the inventor's journal?)

Model/Illustration -

- Is the illustration complete, with all parts neatly labeled, and is a clear attractive, visual explanation of the invention (display board)?
- Is the model and accurate replica of the idea?

Research Performed – Time and effort given to see if this invention had already been invented

Caring for your Pet Inventions

Over the years, we have seen many inventions related to pets and how we care for our pets. Such as:

- Dog Food Separator
- Automatic Dog Feeder
- Cat Feeding Mission
- Interchangeable Pet Shoes
- Doggie Clean-Up
- Giving A Dog a Bone

It's not only important to provide your pet with basic needs, like food and water, shelter and exercise, it is also important to include your pet into the family's everyday life. We all get busy and our pets are the first to get ignored. Please show you care by creating an invention that shows that your dog, cat, or other pet is a part of your family.

Your invention will be judged on:

Originality/Usefulness –

- Does the invention represent an original and creative idea?
- Is the invention a novel or unique solution to an identified pet-related problem?

Written Description/Presentation –

- Does the content of the written description clearly express the purpose of the invention and how it accomplishes its purpose?
- Is the written description complete and appropriate for the inventor's grade level (the inventor's journal?)

Model/Illustration -

- Is the illustration complete, with all parts neatly labeled, and is a clear attractive, visual explanation of the invention (display board)?
- Is the model an accurate replica of the idea?

Research Performed –

- Was time and effort given to see if this invention had already been invented?

ON-LINE INSTRUCTIONS FOR SCHOOL & STUDENT ENTRIES

TEACHERS, when registering your students, you will need to know the following:

Teacher/Advisor's Name
School Name and Address
Telephone Number
E-mail
Student's Name
Parent's Contact Information
Student's Mailing address

Category of Invention:

PLEASE NOTE: *Our advice is that you INCLUDE the parent or inventor in deciding how to categorize their entry and make them aware of the category. We have many inventors who approach us at Regionals saying they do not want their invention in the category their teacher submitted it to and we cannot make changes on the day of the event.

Invention
CHALLENGE
Chain Reaction

Special Award consideration:

Electric
Medical
Pet Award
Engineering Award
Sustainability
Technology/Disruptive Tech
None
Etc.

Is Inventor part of team?

Y/N (2 per team exception of Chain Reaction team of 5)

***Late entries may not have student names listed in printed program*.**

Student Entry Form - Invention
(General Category – includes all sponsored awards)
Bring this form to the Regional Convention and keep with your invention!

Name _____ Grade _____

School _____ Teacher _____

1. Name of invention _____

2. Where did you get the idea for your invention? _____

3. Explain how your invention works. _____

4. Who will benefit from your invention? _____

5. Why do you think your invention is new and original? _____

Student Entry Form – CHALLENGE

Bring this form to the Regional Invention Convention and keep with your invention!

Name _____ Grade _____

School _____ Teacher _____

1. Name of invention _____

2. Where did you get the idea for the challenge? _____

3. Explain how your invention works.

4. Who will benefit from your invention?

5 Why do you think your invention is original and unique for this challenge? _____

CHAIN REACTION Invention Student Entry Form

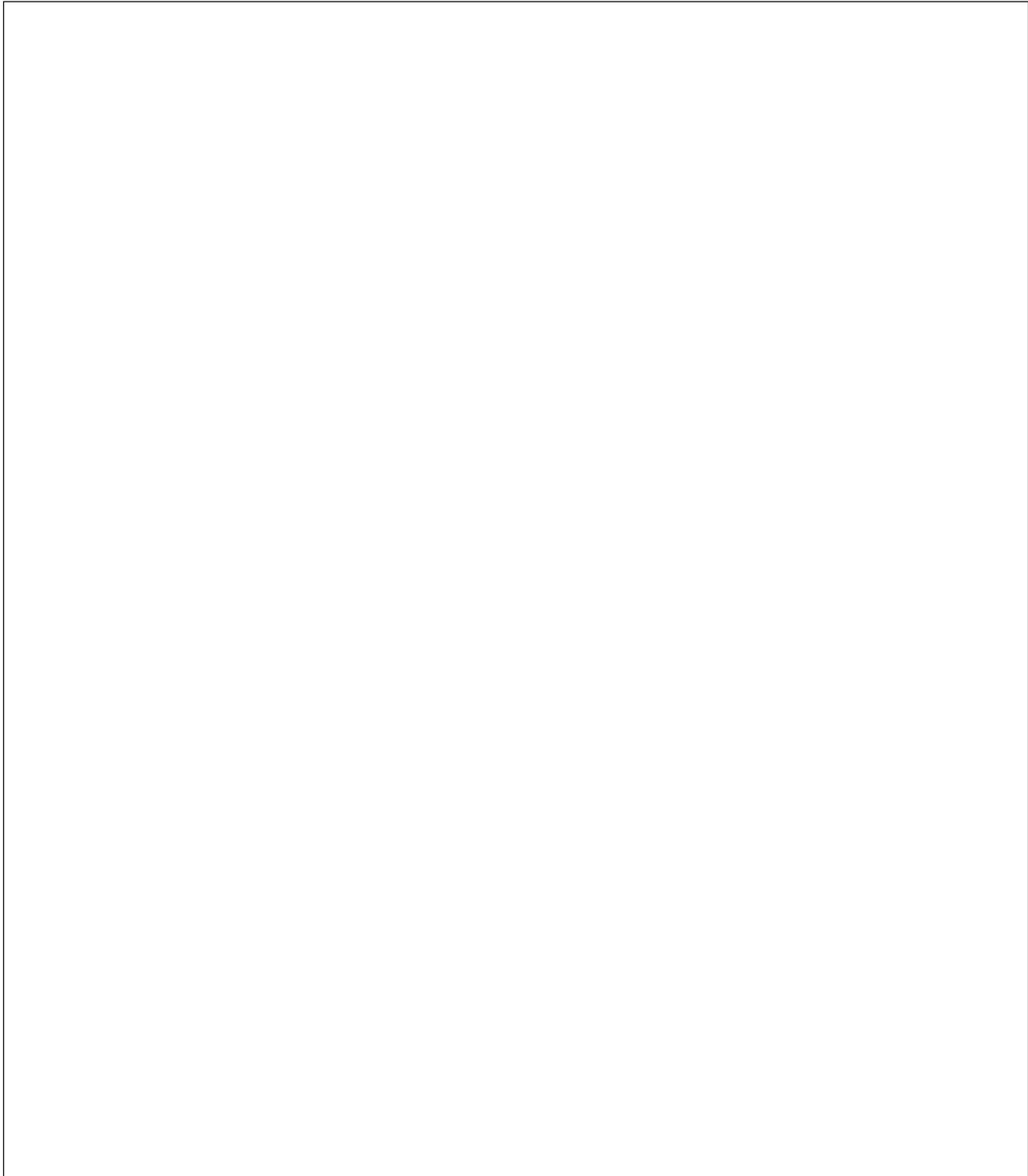
Bring this form to the Regional Invention Convention and keep with your Invention!

A Chain Reaction Invention is a device using the most extraordinary means to accomplish an ordinary task with simple machines. The working construction must be considered safe to operate and must not cause damage. It must use 4 simple machines at least once: wheel & axle, inclined plane, lever and pulley or screw. A minimum of 6 steps is required to complete the task. The demonstration of the device can be creative or dramatic, and the student may trigger the beginning action. It may not take up more space than a 6 foot table/floor area.

Student Name:	Grade:
School:	Teacher:
Name of invention/device:	
What ordinary task does your device accomplish?	
Describe how your device works by listing the steps (at least six), and what happens at each step:	
1.	
2.	
3.	
4.	
5.	
6.	
List the simple machines used and the number of times they are used (at least 4):	

Drawing of Rube Goldberg® Invention:

Draw and label each step – this should match “list of steps” on the front of this sheet.



You can join the conversation on [Facebook](#) and [Twitter](#)! Show us how your students are doing with #InventionConvention and tweet us pics of you using your #YIPKit or students busy in the design process! (#DesignThinking, #YoungInventors, #InventionConvention #STEMIE)

ENCOURAGE the students to have FUN! Good luck with your School Event!