



November 1, 2009

Dear K – 8 Educators

It's that time of year again! The Fidelity Investments 2010 Young Inventors' Program® Annual Celebration will be held on April 3<sup>rd</sup> at Merrimack Valley High School in Penacook. I hope to see you and your young inventors at the event.

Guidelines are attached. Online registration will be available at [www.aas-world.org](http://www.aas-world.org) after the Christmas Break. Deadline for online registration is **Friday, March 12, 2010!**

**New this year!**

You will be able to register your students for **more than one** category. Please check off all that apply when registering online.

If it is an **invention** you will be able to choose **1 or all** of the following categories:

- General
- Medical
- Solar
- Electrical

If it is a **Rube Goldberg**® Machine you will be able to choose **1 or all** of the following categories:

- General
- Medical
- Solar
- Electrical

**Please note in the attached letter from Joe Murray.** If your school district is located in the Greater Merrimack area, and you're in need of volunteers to help judge entries presented to a class or school assembly, please contact Leslie Gouthro, senior public affairs manager, at 603.791.5057 or via e-mail at [Leslie.Gouthro@fmr.com](mailto:Leslie.Gouthro@fmr.com)

**YIP bookmarks are now available for your class or school library. Please e-mail me at [phampton@aas-world.org](mailto:phampton@aas-world.org) if you'd like some for your students.**



**We are still looking for comments from you to update the Teacher Guide**

We hope to update the Meant to Invent Teacher Guide soon and we're looking for comments from teachers who have used the guide. If you have any ideas for improvement, please E-mail [phampton@aas-world.org](mailto:phampton@aas-world.org) – we continue to see funding for teacher guide – your comments for any changes are appreciated.

**A teacher workshop will held in the summer 2010 if there is interest. Please contact [phampton@aas-world.org](mailto:phampton@aas-world.org) to express interest. There is no charge for the workshop.**

**As in the past, all Young Inventors' Program® forms can be found on the Academy's website - [www.aas-world.org](http://www.aas-world.org) under "For Students and Teachers" (right side of screen on home page), such as Inventor's Journal, Tips for presenting to judges and others, and a list of invention books. The NH Chronicle segment featuring young inventors in New Hampshire remains on the home page of the website, as well.**

Thank you for bringing the Young Inventors' Program® to your school. We appreciate your dedication!

Pamela Hampton  
Program Director  
Academy of Applied Science  
24 Warren Street  
Concord, NH 03301  
603-228-4530  
[phampton@aas-world.org](mailto:phampton@aas-world.org)

Turn here<sup>SM</sup>



November 2, 2009

Dear Educator:

On behalf of Fidelity Investments, I'd like to thank you for participating in the Fidelity Investments Young Inventors' Program<sup>®</sup>, administered by the Academy of Applied Science.

Fidelity's sponsorship of this program was made possible through the Fidelity Investments Innovation & Technology Initiative. For five years, Fidelity has been proud to partner with the Academy of Applied Science to ensure that the Young Inventors' Program<sup>®</sup> gives New Hampshire school children the opportunity to build upon what they are learning in the classroom, by expanding their creativity, problem-solving skills, and inventive-thinking.

By helping the Academy foster a passion for these skills at a young age, it is our hope that students participating in events like the Young Inventors' Program<sup>®</sup> will pursue studies and careers in math and science and eventually become part of New Hampshire's talented workforce. With one-third of Fidelity's New Hampshire Regional Center associates employed in technology-related positions, Fidelity recognizes the critical role technologists play in maintaining our leadership position in the financial services industry.

Our associates are also committed to the success of the Fidelity Investments Young Inventors' Program. Over the last few years, dozens have participated as volunteers or judges at both the individual school level and at the annual celebration event. Once again this year, Fidelity associates are interested in lending a helping hand. **If your school district is located in the Greater Merrimack area, and you're in need of volunteers to help judge entries presented to a class or school assembly, we'd be happy to provide Fidelity volunteers' assistance, schedule-permitting.** To request volunteers or for more information on the Fidelity Cares Employee Volunteer Program, please contact Leslie Gouthro, senior public affairs manager, at 603.791.5057 or via e-mail at [Leslie.Gouthro@fmr.com](mailto:Leslie.Gouthro@fmr.com).

Sincerely,

A handwritten signature in black ink that reads "Joe Murray". The signature is written in a cursive, flowing style.

Joe Murray  
Senior Director, Public Affairs  
Fidelity Investments





Fidelity Investments 2010 Young Inventors' Program®  
Annual Statewide Celebration

Saturday, April 3, 2010

8am to 2pm

Merrimack Valley High School, Penacook, NH

*Schedule of the Day's Events:*

8:00	Registration & Invention Setup Judge Orientation Complimentary refreshments
9:00 – 11:15	Judging Inventions – Individual classrooms Rube Goldberg Machines - Gymnasium
10:00 – 11:30	Mr. Phil, Comedic Magician - Auditorium
11:00 – 11:45	Lunch - Cafeteria
Noon	Award Ceremony – Auditorium

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

Teaching invention in the classroom encourages students to think through problems, analyze, ask questions and support decisions. We are confronted everyday with problems demanding solutions, in the workplace and in school. How those problems are solved is often determined by how well we all develop critical-thinking and problem-solving skills.

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. Almost every day they will face at least one problem. They quickly discover that it's also fun!

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 inventing will:

- ❖ Stimulate and foster creativity.
- ❖ Enhance self-image.
- ❖ 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 in our culture.

Students will also:

- ❖ Develop higher-level thinking skills.
- ❖ Use creative and critical thinking skills.
- ❖ Solve actual problems.
- ❖ Use library and other research skills.
- ❖ Learn to document the inventive-thinking process.
- ❖ Experience success and increased self-esteem.
- ❖ Produce an original invention and receive recognition for participating in the invention process.
- ❖ Acquire public speaking and writing skills.

### ***How to get started***

- The Meant to Invent Teacher Guide (available through the Academy of Applied Science) provides detailed instructions and sample forms for your school to start a program in the classroom or after-school program.
- 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.
- Teacher workshops are held every two years during the summer. The next one will be held in 2010.
- Program materials can be found the Academy's website [www.aas-world.org](http://www.aas-world.org) "For Students and Teachers" (right side of screen). In addition to event and registration materials, the following can be found:
  - K - 8 Inventor's Journal
  - A list of Invention books
  - Tips for presenting your invention
  - Inventors are Ordinary People with Extraordinary Ideas
- The Academy of Applied Science will be able to help with specific information.

Pamela Hampton  
Academy of Applied Science  
24 Warren Street  
Concord, NH 03301  
603 228 4530/E-mail: [phampton@aas-world.org](mailto:phampton@aas-world.org)

### ***Preparing for the Annual Statewide Celebration***

As mentioned above, a teacher guide is available to help with step-by-step instructions on how to bring invention to your school.

Now it's time to get ready for the Annual Statewide Celebration.

Event: Fidelity Investments 2010 Annual Statewide Celebration

Date: Saturday, April 3, 2010

Time: 8am to 2pm

8am – 9am	Registration and Invention Set-up
9am – 11:15	Judging
11:15 – Noon	Lunch
Noon – 2pm	Awards Ceremony

Event Location: Merrimack Valley High School  
106 Village St  
Penacook, NH 03303  
(603) 753-4311

Directions: From I-93 (heading north or south) take Exit 17 (Penacook, Boscawen). Take a right from either exit ramp to the yellow blinking light. Take a left and follow this road until you come to Community Drive on your left. Take Community Drive and follow it to the end. Merrimack Valley High School will be in front of you.

## **Timeline**

Once you have decided to invent in your classroom, the following timeline may be helpful to you. **This is a guideline only** – the teacher and student should determine the appropriate tasks and time table according to individual needs.

(On-line registration submission date is by **March 12, 2010** and the Statewide Celebration date is **April 3, 2010**)

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**Week 1** Create an Inventor's Journal with the following components:  
Identify problems that might be solved with an invention.  
Choose a problem to be solved.  
Look for similar inventions.

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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 in the Inventor's Journal.  
Begin working on a model.

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**Week 3** Test the model and improve, as needed.

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**Week 4** Complete the model.  
Prepare a display board.  
Prepare oral presentation (3 minute limit).

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**Week 5** Present invention to class and/or school.  
**Inventions** – Students are selected to attend the annual celebration, at this time. One grade level entry is chosen per **50** student participants. An additional entry is permitted if student participants from a particular grade level exceed **50**.

**Rube Goldberg® Machines** - Students are selected to attend the annual celebration, at this time. One grade level entry is chosen per **50** student participants. One grade level Rube invention entry per **50** participants with an additional entry allowed if student participants from a particular grade level exceed **50**.

Team members are limited to four (4) students. Ties are accepted.

Note: Students can compete in Special Award categories (see section on Judging), can compete in more than one special category, and all inventions are eligible for grade level awards.

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**Week 6** Teacher submits school & student entries form online. Paper entries will **not** be accepted. [www.aas-world.org](http://www.aas-world.org).  
**Online registration will be available November 1, 2008!**

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**School online submissions are due by Friday, March 12!**

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**7 - 10 Days  
Before  
Celebration**

Teachers and parents will receive a confirmation letter from the academy.

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**On the day of the Statewide Celebration – Saturday, April 3, 2010**

All Young Inventors should bring the **completed Student Entry Form** to the Statewide celebration and be prepared to talk about their invention by **displaying their invention, invention journal and/or student entry form and display board, if available.**

Students should be prepared to make an oral presentation of their invention and answer any questions the judges may have. The presentation should not exceed **3 minutes.**

Students **MUST REMAIN** in the room with their inventions and Rube Goldberg<sup>®</sup> Machines for the entire 45 minutes (of their judging session). This is very important since the Specialty Judging (Medical, Electric, etc.) is done at the end of the judging session – we want to make sure that no one is left out in the judging process.

Only student inventors are allowed in the room during the judging period.

**Inventors' Choice**

Each student is encouraged to view other inventions and vote on the invention they like best. They will be given ballots at the time of registration to vote for their favorite invention and favorite Rube Goldberg<sup>®</sup> Machine (1 invention and 1 Rube Goldberg<sup>®</sup>). Votes should be placed in the ballot boxes by **11:15 a.m.** Voting should take place after (or before) their own inventions are judged.

**Questions?**

Pamela Hampton  
Academy of Applied Science  
24 Warren Street  
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## JUDGING AND AWARDS

The judging process is an important component of the celebration. Judges are assigned to each grade level to evaluate each invention and to ask pertinent questions of the inventor. During this time other inventors in the room are invited to listen to each presentation. Again, students must remain in the room with their inventions for the entire 45 minutes. Parents and friends are asked to leave the room while judging is underway.

**Inventions** are 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 problem?
- Does the overall presentation of the invention reflect creative or original work?

Usefulness –

- Does the invention solve a 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 –

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

### **Rube Goldberg® Machines**

Rube Goldberg® Machines are different from the inventions people are used to seeing. A Rube Goldberg® Machine makes a simple task complex. The materials used are 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. The working construction of a Rube Goldberg® Machine 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.

Visit some of the websites indicated below for ideas and additional information on Rube Goldberg Machines.

[http://outreach.rice.edu/~dgabby/science/simp\\_mach/](http://outreach.rice.edu/~dgabby/science/simp_mach/)

<http://edtech.kennesaw.edu/web/simmach.html>

<http://tlc.ousd.k12.ca.us/~acody/machines.html>

[www.rubegoldberg.com](http://www.rubegoldberg.com)

Rube Goldberg® Machines are divided into two groups:

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

**Rube Goldberg® Machines** 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)

### **General Categories**

Judges may 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

Judges may select one Rube Goldberg® Machine for 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 the judging period)**. With ballots they receive at registration, they may vote for their favorite invention and Rube Goldberg®.

### **Special Award Categories**

Student inventions are not limited to the general category and may be judged in the following special award categories as well. Please encourage your students to consider these areas when brainstorming a problem to solve.

**Fidelity Investments Innovation and Technology Award** – Sponsored by Fidelity Investments. This award is presented to the student whose invention reflects Fidelity’s commitment to flexibility, innovation, and creative uses of technology. The award will recognize an invention that leverages technology to produce service enhancements, human efficiencies and cost savings.

1 - Award valued at \$100

**Electric Award** – Sponsored by IEEE - The world’s largest professional association advancing innovation and technological excellence for the benefit of humanity. These awards are given to the inventions that involve the use of electric phenomenon and technology. All inventions using electrical components will be considered.

1 - Award valued at \$75

1 - Award valued at \$50

1 - Award valued at \$25

**Medical Award** – Sponsored by the N.H. Medical Society. These awards are given to the inventions that solve a health-related problem.

3 - Awards valued at \$50 each

**Solar Award** – Sponsored by Sundance Solar ([www.sundancesolar.com](http://www.sundancesolar.com)) - The award will be given for the invention that, in new and practical ways, make it easier for people to conserve energy; showing new uses for renewable energy, using wind, sun or dynamo-generated power.

1 - Award valued at \$100

**Steve Caney Award** – Sponsored by Inventor, Steve Caney. This award is chosen by Steve Caney and is given to the invention of his choice.

1 – Award valued at \$100

**Joyce Kenne Scholarship Award** – Sponsored by Camp Invention. This award is given to the student whose invention displays creativity, originality and “out of the box” thinking.

1-week scholarship - New Hampshire Camp Invention

A week-long summer enrichment day camp offered at local elementary schools in New Hampshire.  
(Grades 2 – 6)

*NOTE: If a team created the winning invention, each team member will receive the same award (as indicated above).*

***All awards are subject to change without notice.***

## Electric Award Guidelines For Inventors and Judges

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

1. There are 3 Electric Awards;  
1<sup>st</sup> place - \$75 value; 2<sup>nd</sup> place - \$50 value and 3<sup>rd</sup> 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. The invention should show interest in and use of electrical phenomenon and technology.
4. 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	
5. The invention must incorporate appropriate safety measures.
6. The invention may be practical, impractical or a Rube Goldberg Machine.
7. 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 Guidelines For Inventors and Judges

**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 –

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



# Registration & Student Forms



## ON-LINE INSTRUCTIONS FOR SCHOOL & STUDENT ENTRIES

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

Teacher/Advisors Name  
School Name and Address  
Telephone Number  
E-mail  
Student's Name  
Student's Mailing address (important to receive letter from the Academy)  
Category of Invention: Invention – Medical/Electric/Solar/General  
Rube -Medical/Electric/Solar/General.  
Is Inventor part of team? Y/N

Go to the academy's website – [www.aas-world.org](http://www.aas-world.org)

On the home page under the section titled, For Students and Teachers, click on the following link:

*Fidelity Investments 2010 Young Inventors' Program® Guidelines & Judging Criteria*

Follow the online instructions.

You will receive an automatic confirmation by e-mail.

**Paper school entries will not be accepted.  
School entries will not be accepted after midnight  
Friday, March 12, 2010!**

**Additional forms are available on the academy's website  
[www.aas-world.org](http://www.aas-world.org)**



Student Entry Form

***Do Not Mail - Bring this form with your invention on April 3, 2010!***

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? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(over)

**MODEL OF INVENTION:**

Your model does not need to actually work, but it has to represent your invention idea. Use everyday materials from around your home or school. Please mark your model clearly with YOUR NAME and the INVENTION NAME.

**DRAWING OF INVENTION:**

Be sure to draw and label all parts in the space below. You may use pencils, pens, crayons or magic markers.

**Student Rube Goldberg<sup>®</sup> Machine Student Entry Form**  
***Do Not Mail - Bring this form with you on April 3, 2010!***

A Rube Goldberg<sup>®</sup> Machine is a device using the most extraordinary means to accomplish an ordinary task with simple machines. The working construction of a Rube Goldberg<sup>®</sup> Machine 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.

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

**Drawing of Rube Goldberg® Machine:**

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

