Young Inventors

A Kit for Competition Organizers

Yuri Huta

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By Yuri Huta

Edited by Leda Gawdiak Huta

Inventors of the Future Project
Institute for Civic Renewal
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This Young Inventors: A Kit for Competition Organizers is dedicated to the late Jerome Lemelson, one of the most prolific inventors in American history, and to the indefatigable inventor-advocate, Frederick Lang.

Also thanks to all the independent inventors, who through their ingenuity and perseverance, have helped shape and maintain this nation's long tradition of technological innovation.

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Foreword

There was a time in American history when youngsters knew the names of prominent inventors who embodied heroic role models for them. Eli Whitney, Robert Fulton, Bell, Edison, the Wright Brothers were known to youngsters as part of their growing up. But that was before television, video and celluloid were invented and prepared for the marketplace. Now cartoon heroes and professional athletes are dominant.

Commercial culture directed toward youth absorbs on the average more of pre-teenagers' time than the hours spent at school. Over thirty hours per week, with no vacations! Clearly, there is something valuable that is lost when so much time is spent gazing, while sitting often munching junk food, instead of using the young mind's fresh curiosity and creativity. Young inventiveness is not touched, stimulated, or given an opportunity to flower. Yuri Huta has produced one way to evoke the latent imagination of youth with his "*Young Inventors: A Kit for Competition Organizers*," as part of the Institute for Civic Renewal's Inventors of the Future Project. While not expecting to approximate the hours and parental involvement that produces Little League Baseball every year, this organizing manual aspires to bring youngsters, teachers, parents and community inventors together to inspire who knows how many productive inventors, inventions and useful economic activities in future years, while engaging young people of all backgrounds in what used to be called "useful pursuits."

The individual inventor is still the principal source of inventions, whether or not he or she is working independently or for companies or government or university departments. There is a myth circulating that complex technologies require committees of inventiveness, with large capital resources and equipment, to invent these days. Tell that to Jerome Lemelson who held over 500 patents before he passed away in 1997. Tell that to Jacob Rabinow who has 229 patents in many complex fields as well.

Mr. Lemelson and his wife Dorothy were so convinced of the need for a vibrant independent inventor environment in this country that they established the Lemelson National Program in Invention, Innovation, and Creativity to support a variety of education initiatives that would attract young people to invent and start their own businesses. At last there is an institutional context with resources to make Yuri Huta's *Young Inventor's Competition Kit* more likely to come to the public's attention and be used in one community after another.

I'll leave it to Mr. Huta to guide you through the very practical and easy-to-use ways to have a successful competition and aftermath. He has invented the Wheel on this Topic and you can roll quickly to a successful event with most of your questions pre-answered right down to forms that you can employ.

For years I have wondered how to bring the fascinating weekly U.S. Patent Office Gazette, with

its descriptions of new inventions receiving patents, to young people. After all it cost over $500 a year for a subscription! Well, now all patents back to 1976 are on the Internet for anyone to see, savor and be stimulated. Given what violent, addictive Pavlovian fare is paraded before youngsters, a screen full of diverse and imaginative patents is not a bad alternative claimant on their growing up time. This should generate more interest in Young Inventor development and competitions. The address for the Patent office's searchable database is: http://www1.uspto.gov/web/offices/ac/ido/oeip/patbib/index.html

Ralph Nader
Washington, D.C.
February 1999

Introduction

This kit is designed to help you organize a Young Inventor's Competition. The goal of the Young Inventor's Competition is to encourage young people to invent. Inventors can improve our society.

The essence of the Young Inventor's Competition is to inspire young people to discover the invention process and to foster innovative thinking. Important inventions have arisen and continue to arise from an innovative use of an accident or mistake. This competition stimulates the type of creative thinking necessary to identify alternative purposes for accidental discoveries. Furthermore, this competition will help shatter the myth that invention is largely a systematic problem-solving process that goes on at corporate research laboratories. The Young Inventor's Competition can help drive home the point that some of the most important U.S. innovations have come from individual inventors. For example, Charles Goodyear was experimenting in the kitchen of a boardinghouse when he accidentally discovered the process of rubber vulcanization.

This forum provides America's young people with a vehicle to showcase and encourage their inventions. The competition will also serve to facilitate communication and networking amongst the young inventors in their exchange of ideas.

The Young Inventor's Competition Organizer's Kit contains all of the materials necessary for staging a successful competition, including:

- How to get the invention process started.
- How to organize local and county-wide competitions.
- Sample letter, news release, evaluation form, entry form, certificate of achievement.
- Inventor profiles.
- Activities to stimulate creative thinking.
- Finding an Inventor Mentor in your area.
- Further resources.

This is the first edition of the Young Inventor's Competition Organizing Kit. Future editions can be improved based on your comments. Please send us your suggestions and ideas.

Inventors of the Future Project
Institute for Civic Renewal
P.O. Box 19405
Washington, D.C. 20036

How to Use This Kit

This *Organizer's Kit* contains two main units: ***Becoming the Organizer*** and ***Inventing 101***. The ***Becoming the Organizer*** unit provides information, activities and resources for you to use to guide children through the invention process. The *Organizing the Competition* section will take you through the step-by-step process of organizing an event that will showcase the imagination and talent of all participants. The next section of this unit, *Samples*, provides you with time-saving resources for organizing the competition. By teaching children the problem-solving strategies described in the third section of this unit, *Sparking Imagination*, you will give them the techniques and assurance they need to think creatively. You can reinforce their creativity by engaging them in the activities described in the last section, *Activities & More Activities*.

The ***Inventing 101*** unit supplies a variety of handouts that you can photocopy and use to stimulate participants and help them in imagining and creating their own inventions. Handouts contain valuable information and activities that will help participants organize their thoughts about problems, solutions, names and other matters related to the invention process.

Be sure to read through the handouts in this unit thoroughly before distributing them. Since they are self-explanatory, there are no teacher's notes to accompany them. The handouts are intended to be used sequentially and as a unit. Handouts 7 and 8 (building and testing a model) are more complex and are optional. We recommend including these activities for higher grades and/or skill levels or for extra credit.

This *Organizer's Kit* is for you to use. Write in it. Photocopy pages. Refer to it. At the end, you will see an evaluation form. Please fill it out and let us know how we can improve upon the kit.

Good luck!

Young Inventors

Becoming the Organizer

1. Organizing the Competition
2. Samples
3. Sparking Imagination
4. Activities and More Activities

Organizing the Competition

Hosting a competition will require organizational skills on your part. This section should help you remember the many details that will be involved.

The main steps in organizing the competition are:

1. Building a Coalition
2. Selecting Participants
3. Setting Guidelines
4. Determining Budget and Sponsors
5. Choosing a Date
6. Selecting a Location
7. Obtaining Publicity
8. Finding Judges
9. Organizing Logistics.

When organizing the competition, you must determine the type of entries that will be submitted and judged, specifically presentations, inventor's journals and/or models. The samples and handouts in this kit require a presentation and an inventor's journal to be submitted for the competition. Building and testing a model is optional and the model itself can be used for extra credit. However, you should tailor this kit to suit the age and abilities of the students with whom you are working.

The checklist repeats much of the information in this section in a concise format. Armed with this kit, a calendar and a notebook, you should be well-prepared for organizing the competition.

How to Organize an Invention Competition

Before carrying out any of the steps below, read through this entire section and the checklist that follows. This will help you ensure that you are prepared.

Step 1 Getting Started—Building a Coalition

The first step in organizing is to find people just like you. Find people who are interested in introducing children to the world of invention. Approach school principals and teachers, scout troop leaders, members of local inventor organizations, museum directors, parents and local business owners. Set up a meeting with interested parties. The sample section of this unit contains a sample letter to potential coalition members for your first meeting.

At this meeting, discuss what tasks will need to be done to organize an invention competition (you can even make copies of these three pages or the checklist at the end of this section and hand it out). Assign individuals to do the various jobs involved in hosting the competition. You will need people to select an appropriate date, secure a location, recruit judges, attract participants, solicit sponsors, publicize the event, provide participants with certificates of achievement and organize the itinerary for the day.

Step 2 Participants

Decide who will be eligible to participate. Will this inventor's competition be limited to children of certain age groups, from a certain grade, scout troop, science club or particular region or city? Once this has been determined, contact the group(s) that will be eligible to participate as well as any adults involved with the group. The planning stages for the event should include representatives from the eligible groups. For instance, if the competition will be open to an entire school, meet with the school principal and teachers to explain the event.

If the scope is to include all children within a city, publicize the event well in advance. Leave information in schools and libraries as well as any youth oriented groups (e.g., 4-H, YMCA, YWCA, etc.). Provide teachers, scout troop leaders, etc., with information on stimulating creative thinking in kids. You can give them extra copies of this kit or excerpts from this kit.

Step 3 Guidelines

Guidelines should be established for the competition entries. Will participants be required to produce their invention journal, a presentation board and/or an actual model? Will there be an opportunity for extra credit? How will the entry be judged? What criteria will be used? Will

students receive the judge's evaluation form when the competition is over? What restrictions will be in place (e.g., materials, cost of materials, size, parental involvement, etc.)? Are the entries to be done by individuals or teams? What safety precautions will need to be taken for the types of entries? What will the deadline be? Will the participants be anonymous (receiving an identification number)? A sample instruction form, entry form and judge's evaluation form are included in the sample section. Once you have set your guidelines, dates and location, you can complete and distribute these forms. Be sure that the guidelines are accurately reflected in your final forms.

Step 4 Budget & Sponsors

Define revenue sources (e.g., sponsors, fundraisers, donations, etc.), expenses (e.g., publicity materials, site, prizes, invention-related field trips, etc.) and fee schedules in a budget.

Local sponsors can help defray some of the costs for the competition and attract participants. Sponsors can also provide in-kind gifts such as medals, trophies, supplies. In addition to gifts, sponsors may be willing to lend resources and equipment to the competition. Furthermore, sponsors may be able to provide a master of ceremonies for the competition, mentors for the students and judges to evaluate entries.

Where can you find sponsors? Look to businesses that are community-oriented, sell products marketed primarily to youth or that depend on the invention process. Contact civic organizations, community groups, museums, schools, colleges, universities, law firms, research laboratories, churches, television stations, radio stations, etc.

When you contact sponsors, be specific about your needs. Let them know if you are looking for funds, in-kind gifts or human resources. Tell the sponsors how all contributions will be used. Describe the competition and the groups involved. Assure them that they will be recognized for their contribution and tell them how.

Once you have enlisted sponsors, send them regular updates on the progress of the competition. Remind them what they have pledged to contribute as the date draws near. When the competition is finished, send each sponsor a thank-you card.

Step 5 Choosing a Date

Choosing a date for the event usually depends on the availability of the facilities you plan to use. When selecting a date, it is important to consider several key factors:

- Will schools be in session and will children have time to participate
- What other public events/holidays are happening at this time
- Does the timing coincide well with the schedules of your judges and sponsors
- Is this a good time for the people who will help coordinate this event

Step 6 Selecting a Location

Try to estimate the number of participants in the event and try to find a location accordingly. Make requests for space well in advance, at least several months prior to the event. In selecting a site, it is important to keep in mind any special amenities the participants may require. Good places to look for space are school gyms, libraries, shopping malls, local service groups' facilities, church halls, hotels and conference centers.

Try to anticipate the needs of the location by answering the following questions. Will the site be affordable or even free? Is it in a safe area? Is there parking available? Will the site manager allow you to use space for storage before and after the event? If some of the entries need electricity, will outlets be available? Is it accessible to wheelchairs? Are the doors wide enough for the maximum allowed size of entries? Does the site have any restrictions as to the nature and types of materials that will be brought in? Will you need to provide transportation to the site for participants, judges, etc.? Is public transportation available to this site? Is it easy to find?

If you select a location that may be new to your participants, be sure to distribute a map and directions along with the entry instructions and entry form. Also, if you will be using several rooms, you may want to prepare a site map. Be sure to mark the following areas: competition rooms, information/registration booth, judge's corner, public restrooms, public phone, wheelchair-accessible entrance, parking lot, etc.

Step 7 Publicity

Publicity for the competition will help participants feel a sense of accomplishment and provide special recognition for their efforts. The publicity can take many forms: electronic communication (e.g., e-mail announcements and web pages); media (e.g., newspapers, television and radio); community (e.g., library displays, school newsletters, community bulletin boards, church bulletins); as well as word of mouth. The key is to get the word out to the community that this competition is going on. Keep a list of publicity contacts for future reference.

Some hints in dealing with the media:

- your local library or state legislator should have a "state handbook" with the names and addresses of all newspapers,
- keep in mind that television is visual and a room full of excited children demonstrating their inventions should be appealing to television stations,
- learn the deadlines for newspapers and radio and television broadcasts and strive to meet these deadlines,
- do not ignore your local cable access channel which is a fantastic medium to reach an audience interested in local events.

Try to assign the job of publicity to a volunteer that has experience dealing with the media and/or has good communication skills and is knowledgeable about the competition. You can notify the media about your event by calling journalists directly, sending out press releases and/or writing a letter-to-the-editor. See the samples section for more information about preparing a press release.

Ensure that your volunteer or you, the organizer, will be available to speak with the media on the day of the competition. Have press kits available to be given to any media personnel. These kits should contain a press release for the day of the competition and any previous press releases. Previous articles and background information about the competition can also be included in the press kits. Ensure that all volunteers know where they can obtain a press kit should they be approached by a member of the media. Also, ensure that volunteers know who is assigned to talk to the media.

Step 8 Judging

Who can be a judge of an invention? Anyone can be a judge. Prospective judges could be inventors themselves (contact inventor organizations in your area), teachers, professors, sponsors and community leaders. It is important to get a panel of judges with a diverse background. Judges may work singly or in teams.

How do you judge the winner? Create a clear and concise evaluation form for the judges to easily and quickly fill out when reviewing the entries. This will ensure that inventions are judged objectively. The criteria listed on the judge's evaluation form should match the criteria that participants' inventions are required to meet (see the judge's evaluation form in the sample section).

Judges should be allowed ample time to judge entries. This is especially important if the judges will be permitted to interview participants. If interviews are allowed, have a predetermined list of appropriate questions that may be asked (e.g., what problem does the invention solve; how does it work; explain your research and testing; explain your inventor's journal; etc.).

Ensure that judges inspire students versus embarrass them. Prepare all appropriate materials for judges including evaluation forms, clipboards, etc. If judges are to see the entry forms of the participants, ensure that they receive each form or that the forms are attached to the presentations in advance. Assign judges to groups of presentations, if appropriate, ahead of time. You may want to group presentations according to grades, types of inventions, etc. Be sure to allow volunteers enough time to tally the results and announce the winners.

Step 9 Logistics

There will be many logistic considerations that you will have to determine for the competition. Prepare an itinerary for the day of the competition (e.g., set-up, registration, judging, interviews,

winners announced, etc.). Distribute it to volunteers, participants, judges, etc. You may even want to peepare an itinerary for the week prior to the competition to help you organize last minute details.

Ask the maintenance/conference staff of your location or your own volunteers to help you set up the tables, podium, speaker system and anything else that you may need to prepare beforehand (preferably a day or two in advance).

Select several volunteers to work at a registration table on the days when participants are bringing in their entries. The day(s) on which participants are to enter their submissions should preferably be scheduled a day or two in advance of the competition itself. The volunteers should inform and direct participants. Volunteers should ensure that peesentations are complete, including inventors journal, entry form, etc., as appropriate. Have a plan for what will happen to incomplete entries (grace period for submissions, disqualifications, etc.). Be sure that the volunteers have adequate copies of any materials that they will need (e.g., itineraries, site map, identification tags, etc.). Also, ensure that your volunteers know the site well and can provide directions to the restrooms, wheelchair-accessible entrance, phones, storage area, etc.

You should have a registration table/information booth for the day of the competition as well. This central location can be useful for resolving last minute details and for registering participants, parents and visitors, as necessary. Again, the volunteers at registration should be equipped with any necessary materials, such as sign-in sheets, pens, pencils, name tags, site maps, press kits, and should be knowledgeable about the location of facilities within the building. If there are other events occurring in the same building on the same day as the competition, you and your volunteers should be aware of them. People who are lost in the building may ask you and your volunteers for directions to the event. If you are prepared to answer their questions, you can dispense with them quickly. Also, you should let the organizers of the other events know where your competition is being held, so that they may send any lost participants or judges to the competition rooms directly.

You may want to have a separate judges' corner with a volunteer or two. Here, judges can pick up their evaluation forms, name tags, itineraries and any other pertinent infoemation. They should return to this area with their completed evaluation forms for tallying. A volunteer from the judge's corner can be responsible for tallying the results and writing out the names of the winners clearly for the master of ceremonies to read. Also, ensure that you have a volunteer responsible for organizing and distributing any medals, ribbons or prizes. This is a good time for your master of ceremonies to thank the sponsors of the competition (individually if there are not too many) and the volunteers (again, individually if there are not too many).

Lastly, ensure that you have a clean-up crew to take down the tables and other materials once the competition has ended.

Checklist for Organizing the Competition

Most of the information in this checklist is covered elsewhere in greater detail in this Kit. However, it may be useful for you to ensure that you have not forgotten anything in planning this competition.

Planning the Competition

1. ___ Read through the Organizer's Kit.
2. ___ Select a date for the first organizational meeting.
3. ___ Notify potential coalition members about the meeting via letters and phone calls.
4. ___ Assign individuals various tasks such as organizing logistics (e.g., date, time, etc.), sponsorship, publicity, judges, etc.
5. ___ Decide who the participants will be.
6. ___ Hold a meeting with representatives from the participating groups.
7. ___ Provide teachers, troop leaders, etc. with activities to help stimulate creative thinking.
8. ___ Create guidelines.
9. ___ Write the list of materials you will need (e.g., photocopies of activity sheets, medals, awards, etc.).
10. ___ Create a budget.
11. ___ Enlist sponsors.
12. ___ Plan further invention-related activities such as a field trip to a Science Museum.
13. ___ Choose a date for the competition.
14. ___ Select a location. Prepare a map and directions to the location if necessary. Prepare a site map if necessary.
15. ___ Publicize the competition.

16. ___ Notify the media about the date and ask them to attend.

17. ___ Ask your local cable station to tape the event.

18. ___ Enlist mentors, judges and a master of ceremonies for the competition.

19. ___ Ensure that teachers, troop leaders, etc. have all participant handouts that pertain to the inventing process.

20. ___ Send reminders to sponsors, participants, mentors and judges about what their responsibilities are.

21. ___ Distribute participants' entry forms.

22. ___ Distribute competition instructions and location map and directions.

23. ___ Plan the layout of the room before the competition day.

24. ___ Prepare judge's entry forms, identification tags, directional signs, clip boards, pencils, cameras, medals, awards, certificates of achievement, press kits and any other materials that will be necessary for the day of the competition.

25. ___ Select one or several volunteers to be responsible for preparing the right number of materials, having them available during competition day, distributing them and cleaning up afterwards.

26. ___ Prepare and distribute a final press release. Ask those involved to provide you with quotes.

27. ___ Arrange for room set up and registration.

28. ___ Ensure that you will be able to lock the room if the entries will remain overnight.

29. ___ Obtain parent permission slips and entry forms.

30. ___ Arrange for transportation to the site (if necessary).

31. ___ Obtain a public announcement system to announce the winners.

32. ___ Ask a volunteer to be the master of ceremonies.

33. ___ Write down any information that the emcee will have to read (e.g. thanking sponsors, volunteers, etc.).

34. ___ Prepare an agenda and have enough copies for anyone who may need it.

35. ___ Assign the entries and/or judges into groups.

36. ___ Ensure participants know when to take down their presentations.

37. ___ Have a group of volunteers assigned to put away the tables and any other materials.

On Competition Day

38. ___ Brief the judges with any instructions. Make sure that they remember this competition is meant to encourage children and help them thrive.

39. ___ Ask several volunteers to be available to help the judges get started.

40. ___ Have a plan and a volunteer for gathering and calculating the results.

41. ___ Ensure your assigned volunteer is ready for organizing and distributing medals, awards and certificates of achievement. Make sure that this is coordinated through the master of ceremonies.

42. ___ Have fun!

After Its Over

43. ___ Ensure the presentations have been taken down and the area cleared.

44. ___ Send thank you cards to judges, sponsors, volunteers and others.

Samples

This section contains the following samples:

1. Letter to Potential Coalition Members
2. News Release
3. Instructions
4. Young Inventor's Competition Entry Form
5. Evaluation Form for Judges
6. Certificate of Achievement.

These samples can be used exactly as they are or changed to suit your needs. Feel free to make photocopies.

Sample Letter to Potential Coalition Members

Date

_____ (Name of Coalition Member)
_____ (Address)
_____ (City, State and Zip Code)

Dear _____ (Name of Coalition Member):

Encouraging children to invent has increasingly been recognized as an important role in nurturing and developing our young people. Children that learn the spirit of creativity and innovation today will become inspired leaders with vision tomorrow.

In order to nurture that inventive spirit in young people, I am organizing a Young Inventor's Competition for _____ (fill in Grade, School, Boy Scout Troop, Girl Scout Troop, etc.). I hope that this competition will help our children gain the confidence and skill they will need to translate their ideas into reality.

I would like to invite you to join me in this effort by attending our first organizer's meeting at _____ (fill in day, date and location). Your knowledge and experience will be an invaluable asset to the planning of this competition and I would greatly appreciate your input.

Furthermore, I would like to request _____ (fill in personnel for mentors, personnel for judges, funds, space, supplies, etc.) from you (your organization).

Please call me with any questions or concerns that you may have at _____ (fill in your phone number). Thank you for your consideration.

Sincerely,

_____ (sign your name here)

_____ (type your name here)

Sample News Release

Notifying the press will heighten the excitement for the participants and judges involved in the competition. Furthermore, it will inform the community about the positive activities occurring in your school, Girl Scout Troop, 4-H Club, etc. Below is a sample press release that can be copied and tailored to your needs. Be sure to follow the format. Write "MORE" at the bottom of the page if the press release will continue on the next page and write "###" to signify the end of the press release. Your press release should include vivid details of the competition. Including quotes from organizers, judges and/or parents will make your press release more interesting.

FOR IMMEDIATE RELEASE

Date:
Contact: (select a person that is well informed about the competition and easy to reach)
Phone and Fax Number:

Creative Youths Compete in an Inventor's Competition

Home, PA—More than 50 students gathered with presentations in hand for a Young Inventor's Competition at ABC School.

Each participant had two months to prepare an invention presentation for the competition. Participants kept a journal that recorded their progress. Children participated in activities in class and at home that helped them learn creative thinking skills such as brainstorming. Participants had to identify a problem, solve it, research whether or not such a solution has been proposed before and then design a presentation to showcase their invention.

"This competition is an important opportunity for our children to learn how to think creatively and to use their ideas to make a workable solution. These children will be the leaders of the 21st Century and we hope this competition will help them in gaining confidence in their abilities to be imaginative and productive," stated Margaret Winsted, the competition's organizer.

The entire community became involved as representatives from businesses, clubs, nonprofit organizations and other entities came forward to work with the participants as mentors, while other community leaders were asked to judge the competition.

"I was thrilled to help with this competition, because I know it is an excellent opportunity for our children. Today's youth must be imaginative and knowledgeable for us to meet the global challenges we are facing," stated Jim Reno, a local business owner and judge for the competition.

###

Sample Instructions

Each participant should receive instructions about entering the competition. This should be given to the participants as early as possible. Tailor the instructions form below to suit your needs. Each participant should also fill out an entry form (see following page). The entry form should be used to keep track of entries and provide judges with additional information if need be.

Entering the Young Inventor's Competition

Entry
Participants must return an entry form by (date). Presentations should be no larger than (size). Presentations must include the inventor's journal.

Date/Location
Presentations should be delivered to (room) at (location) no later than (date and time).
The competition will be held on (date) at (time) in (room) at (location).

Criteria
A Judge will interview you and evaluate your presentation. Your presentation should be:

1. original (present new or unusual ideas)
2. creative (display free and imaginary thought)
3. adequate (respond adequately for the intended purpose)
4. simple (made simply and with few materials)
5. useful (have clear practical uses)
6. attractive (visually appealing)
7. expressive (usefulness is readily understood)
8. influential (make users think about the topic in a new way)
9. well-crafted (made with care and diligence)
10. thorough (journal shows thorough research)

Extra Credit
You may submit a model of the invention as extra credit.

Parental Involvement
Parental and/or Mentor Involvement is allowed in the following manner:_____
_____

Entry Removal
Presentations must be removed on (date & time) from (room) (location).

Young Inventor's Competition
Entry Form

To be Completed by Student

Name_____

Grade_____School_____

My invention is called:_____

What is the need or problem solved by your invention?

_____

_____

_____

How does your invention work?

_____

_____

_____

_____

What materials did you use in making your presentation? How much did the materials cost?

_____

_____

_____

_____

What research did you do to make sure your invention is new?

_____

_____

_____

To be Completed by Parent (Permission)

I have read this form and give my child permission to participate in the competition.

Parent Signature _____ Date _____

To be Completed by Competition Organizer

Participant Identification Number_____

Evaluation Form for Judges

To Be Completed by Judge _____

Name or Identification Number of Student Inventor: _____

Title of Invention: _____

Date: _____

_____

This evaluation form has been completed by (please check one):

❑ Teacher/Coach ❑ Judge/School Evaluator ❑ Troop Leader ❑ Mentor

❑ Other (Please explain) _____

Name of Judge or Identification Number of Judge _____

_____

Please rate the Presentation (including the Inventor's Journal) on the following 10 criteria. Each invention should receive its own evaluation form.

Criteria:	**Evaluation of this Invention:**				
	(low)		(average)		(high)
1. **Original**. This invention presents new or unusual ideas. The invention is not ordinary.	1	2	3	4	5
2. **Creative**. This invention displays free and imaginary thought.	1	2	3	4	5
3. **Adequate**. This invention responds adequately for the intended purpose.	1	2	3	4	5
4. **Simple**. This invention was made as simply and with as few materials as possible.	1	2	3	4	5
5. **Useful**. This invention has clear practical uses and will be valuable to its prospective users.	1	2	3	4	5

	(low)		(average)		(high)
6. **Attractive**. The presentation is visually appealing.	1	2	3	4	5
7. **Expressive**. The purpose and usefulness of the invention is readily understood by users.	1	2	3	4	5
8. **Influential**. The invention will make users think about this area in a radically new way.	1	2	3	4	5
9. **Well-crafted**. The presentation shows that it has been made with care and diligence.	1	2	3	4	5
10. **Thorough**. The inventor's journal shows thorough research and work on the invention.	1	2	3	4	5

This invention presentation ❑ includes a model (extra credit 3 points)

❑ does not include a model (no extra credit points)

Describe_____

Best Features	Limitations	Other Comments

To Be Completed by Volunteer

The total score (out of a possible 50 + 3) for this presentation is: _____

Certificate of Achievement

awarded to:

_____

for the successful participation in the Young Inventor's Competition

_____ _____

Date Signed

Sparking Imagination

This section will help you teach your students to think creatively. The 3M company, known for having innovative staff, has studied their innovators and revealed that inventors usually have six characteristics.

Inventors:
1) are creative;
2) have broad interests;
3) are problem solvers;
4) are self-motivated and inquisitive;
5) have a strong work ethic; and
6) are resourceful and take multiple approaches to a problem.

This section will help you develop some of these characteristics in young people.

The use of the brainstorming technique will serve as the foundation for problem-solving (characteristic three). The methods that follow, such as Forced Fit and Hits and Clusters, serve to further develop the ideas and solutions generated in the brainstorming session.

These methods are perhaps best used in order. At the end of the brainstorming section, you will find some suggestions for practice sessions. You may wish to choose one suggestion, such as improving upon a bathtub and use it throughout all of these methods to help familiarize students with these techniques.

Let Those Juices Flow!

Fostering Creativity

To encourage any child to invent is to encourage that child to be creative. Children are naturally curious and imaginative; however, there are some steps that you can take to help foster that imagination. First, as an organizer, you can provide children with techniques to bolster their creativity. Second, you can maintain an open-minded attitude toward their ideas.

According to Dr. Roger L. Firestien, Center for Studies in Creativity at Buffalo State College in Buffalo, New York, embracing the following ten points will foster creativity. Suggest these ideas to the young people participating in the invention contest. You may want your students to record these ten points in their inventor journals as a reminder. And, practice them yourself!

1. **Capture ideas whenever and wherever they come to you.** Many of our best ideas are "free" and they often come to us when we're relaxed and not working on a problem. Record your ideas immediately.

2. **Watch your verbal and nonverbal behavior.** Model openness and acceptance of ideas. Much of how and what we communicate about ideas is expressed in the verbal and nonverbal ways we treat the ideas of others.

3. **Redefine your problem in many ways.** Ask yourself "why?" Many times we set out to solve the wrong problem. Challenge your assumptions.

4. **Go outside of the problem area.** Look for connections for solving problems from other areas. Ask yourself, "What ideas can I get for solving this problem from a completely different world?" Remember that the history of science is filled with breakthroughs in which two different worlds, originally considered unrelated, were combined to form a new idea.

5. **Develop creativity habits.** When working on a challenge or an opportunity ask yourself, "How else can I do this?" "What if?" "How can I use something that doesn't fit with this at all?"

Let Those Juices Flow!

Continued

6. **Separate your imaginative thinking from your judgmental thinking.** When generating ideas, don't criticize your ideas or the ideas of others. After you have generated a number of ideas, then evaluate them, but don't try to generate and evaluate at the same time.

7. **Pluses-Potentials-Concerns.** Evaluate ideas by considering the Pluses or strengths of the idea first; then list the Potentials in the idea; then list the Concerns (PPC). When you determine your concerns about an idea, phrase your concerns as you would phrase a question or problem statement. This way your mind will immediately begin to look for ways to overcome the concern instead of disregarding the entire idea. The ALoU method described later in this kit is a similar technique.

8. When working to solve a problem, **set a quota of at least thirty to thirty-five ideas and strive to reach that quota.** To get new ideas, it is important to stretch beyond obvious thinking. The creative person knows that there are many ways to solve a problem, market a product, discipline a child; the more ways of accomplishing your goal, the greater are your chances of doing it.

9. We are all creative, but it is important to realize that **creativity requires practice** and development like any other skill.

10. **Look at problems as opportunities.** Every "problem" we encounter has something to teach us. As Richard Bach author of *Illusions* said, "There is no such thing as a problem without a gift for you in its hand... We seek problems because we need their gifts."

Brainstorming

Brainstorming is a method in which a group or an individual attempt to come up with as many solutions, traditional and unusual, for a particular problem. The idea behind brainstorming is to generate as many solutions as possible, regardless of how silly or implausible they may seem. Brainstorming encourages quantity of ideas over quality. It is a volume exercise.

Rules of Brainstorming

The only rule is that no idea can be criticized or evaluated during the session. This method is intended to be non-intimidating. Encourage all students to participate in coming up with a large number of original ideas. Criticism discourages creative thinking.

How to Brainstorm

It is most effective if someone assumes the role of leader of the session. The leader's responsibilities are as follows:

- introduce the problem to be solved (see the following page for ideas),
- determine a time limit for the session,
- solicit ideas from participants (go around the room with each person having a turn),
- encourage participants to build on each others ideas,
- stimulate an enthusiastic, uncritical attitude,
- keep the session on course,
- keep the session moving, ensure that no train of thought is followed too long,
- record all ideas on a chalk board or other surface that can be seen by all participants,
- if you plan to try more of these problem-solving methods, be sure to keep all of the ideas you have generated.

Have fun!

Suggestions for Practicing Brainstorming

Before your students begin brainstorming about solving a problem for their invention, you may want to practice brainstorming with your class or group on a completely unrelated topic. Below are some suggestions. You may want to select one to use throughout all of the problem solving practice sessions.

- List all of the ways you can think of for improving a bathtub.
- A non-poisonous snake escapes from the zoo and you have to catch it. You can't touch it with your hands or harm the snake.
- List all the uses you can for a ladder (the obvious and the unusual).

Points to Remember

1. Delay judgement.
2. Strive for quantity.
3. Generate wild and crazy ideas.
4. Create combinations by building on other participants' ideas.

What Else?

There is a whole world of resources on creative thinking. Brainstorming is perhaps the most commonly used method to encourage one's imagination. However, there are many other techniques, such as: SCAMPER, Forced Fit, Hits and Clusters, etc. Some of these techniques are described in this kit. The resources section notes books and magazines that can teach you more about these topics.

SCAMPER

scam•per *v.* To run freely or playfully.

SCAMPER is an exercise that helps students develop their imagination by encouraging them to *think freely and playfully*. It will stimulate thinking from many different perspectives providing a wider range of varied and original ideas when problem-solving. SCAMPER is often used to enhance brainstorming. It can be used at any stage of a problem-solving session.

SCAMPER is an acronym in which each letter represents a method to develop an idea further.

S Substitute/switch: use something else
C Combine/connect: put something together
A Adapt
M Modify, minify, magnify
P Put to other uses
E Eliminate
R Reverse, rearrange, reorient

Suggestions for Practicing SCAMPER

To assist students in using and remembering this exercise, clearly display the acronym and the actions each letter suggests. Choose an every day, ordinary item that students use at home or in school. For example, using a sock, go through a SCAMPER exercise with the students. Below are examples of answers that may be generated:

S *Substitute* your sock for a glove.
C *Combine* many socks by tying them together to make a toy for your pet.
A *Adapt* your sock to slippery floors by gluing rubber to the bottom for a slip-proof sock.
M *Magnify* the size of your sock to make a sleeping bag.
P *Put* your sock to *another use* by filling it with rocks and using it as an anchor.
E *Eliminate* the toe area of your socks for an arm band.
R *Reverse* a sock (inside out), draw eyes, nose and a mouth and insert a hand for a puppet.

Try this activity with your class or group of young people by using some of the problems that you solved using your previous brainstorming technique, such as making a bathtub better, or by choosing a new object (e.g., a pencil, shoe box, curtain, desk, etc.). Write the word "SCAMPER" in big letters on a chalkboard and encourage everyone to think freely and playfully. Do not allow any criticism or judgement of the ideas. Keep all of the ideas recorded for further problem-solving activities.

Forced Fit

Make the familiar strange and *make the strange familiar.*

Forced Fit is a creative thinking method that is used when students have exhausted their ability to think in new directions and supply fresh ideas. This exercise is used as a brainstorming enhancer. *Forced Fit* encourages students to explore fun and absurd possibilities, giving them free reign in their thinking.

Rules of the Forced Fit Method

Laugh, have fun and let your mind wander.

How to Create a Forced Fit

1. Draw four to six columns on the chalk board. Choose a problem that needs to be solved or an idea that needs improvement (the same problem that you used in your brainstorming practice session would be best). Write it down at the top of the first column. Make sure everyone can see.

2. Select three to five completely unrelated objects (your students can help you select these). Write them down on the chalkboard (each at the top of a separate column).

3. Have the students generate a list of attributes (qualities or characteristics) for these objects. Record the attributes in the corresponding column. Encourage the students to come up with as many attributes as possible.

4. Now, "force fit" one attribute from an object to the problem or idea. The goal is to help students make new connections (between the problem or idea and the list of attributes), linking seemingly unrelated ideas together to come up with new possibilities. If at first the combination doesn't work, move onto the next attribute. "Forced fitting" will not work with every attribute.

If this entire process seems silly and illogical, then it is working. Remember the purpose is to combine unrelated things, to "force" connections in order to come up with new ideas. Do not allow any judgement or criticism of these ideas.

5. Record your results in the first column below the stated problem.

More Ways to Create a Forced Fit

In addition to using visual objects, students can also use their senses for the "forced fit." To encourage students to think about their senses, give students different textures for them to feel; have students smell vials with different aromatic objects inside each (e.g., spices, perfume,

scented soaps, etc.); and play a variety of sounds (e.g., classical music, nature sounds, traffic, etc.). Remind students to "force fit" these various stimuli into the problem or idea.

Suggestions for Practicing the Forced Fit Method

Below is an example of how a *Forced Fit* method may work using the example of a better bathtub. You can use any everyday object such as a car, student's desk, etc. Again, your best choice is to choose the same problem addressed in your brainstorming session to generate completely new ideas and solutions.

Problem: A Better Bathtub	**Light bulb**	**Roller skate**	**Bridge**
a tub with see-through glass, sides (children can be better supervised)	*glass*	fast	strong
a tub on wheels (can be rolled out to the porch for washing pets)	hot	*wheels*	cars
a tub with non-rusting faucets	vision	leather	*rusting*

Note: This is the last column to be filled in.

This is just an example. Your list should be much longer. Remember, no judgments or criticisms are allowed. Also, be sure to keep all of the ideas that have been generated in this exercise if you plan to carry out the following problem-solving exercises.

Hits & Clusters

Hits & Clusters is a tool that helps select a few promising ideas from the large lists that students have generated through brainstorming, SCAMPER and Force Fit exercises. Up to this point, all of the problem-solving activities have centered around generating many ideas. Judgments and criticism have been discouraged. Now these ideas must be evaluated so that the most promising can be selected. The premise behind this exercise is to reduce the number of ideas while selecting the most promising ones.

How to Hit

1. Write all the previously generated ideas randomly on Post-it™ notes or on a blackboard. Have students read every idea to familiarize themselves with them.

2. Give all students a predetermined number of votes that they will use to choose the ideas that really "hit" them (ideas that appeal to them, or jump out and grab them). In selecting the number of votes to give to each student it is important to consider the number of ideas that are to be voted on and the number of students who will vote. Too many or too few votes may create a situation where no clear favorites are evident.

Voting can be accomplished in several ways, e.g., place a check mark or dot next to the ideas that "hit" each student.

What Constitutes a Hit?

An idea can be considered a hit when it hits the mark or is arresting, workable, captivating, clear, appropriate, feels right and/or solves the problem.

How to Cluster

Count up the votes for each hit and select the top winners (the number of winners will depend on the number of ideas generated). Once the ideas with the most hits have been identified it is time to place them into meaningful categories—clusters. Encourage the students to discuss the possible clusters (groupings), and to be flexible in changing the contents of the clusters. Post-it™ notes come in very handy here, since it is easy to rearrange clusters thereby getting a truly proper grouping of related ideas.

It may prove helpful to name the clusters according to their category. Now, students have a more manageable and categorized sets of ideas to further review.

ALoU — Advantages, Limitations (Overcoming Limitations), and Unique Qualities

ALoU is an effective tool for examining a small group of ideas in a positive, constructive and focused manner. Both positive and negative aspects of ideas are scrutinized for their potential.

Once ideas have been hit and clustered, the ALoU tool can be employed to evaluate, cultivate, improve and enhance them. Ideas that may seem wacky or highly unusual lend themselves to being scrutinized using the ALoU method, helping students find that "diamond in the rough" and avoiding the common knee-jerk reaction of rejecting ideas immediately. Select the top solutions from your Hits and Clusters exercise before proceeding with the ALoU.

How to ALoU

Draw a chart with five columns and a number of rows equal to the number of solutions you wish to examine. Be sure the rows are wide, as each will contain much information. Label the columns as follows: Solutions, Advantages, Limitations, Unique Qualities, Overcoming Limitations.

1. List the advantages of the first solution you wish to examine:
- What is positive? What are the best points?
- State specific, concrete strengths.
- Avoid superficial responses.

By beginning the examination with the positive aspects, a constructive tone is set for the remainder of the exercise. Exhaust all possibilities before moving onto the next step.

2. List all the limitations. Note: It is imperative to list the limitations in the form of a question, rather than a criticism.
- In what way might ...?
- How could . . . be overcome?

This method of listing limitations encourages the participants to seek ways of overcoming the limitations, rather than condemning the idea because of criticism.

3. List the unique qualities of the idea.
- Why is it original?
- Why is it so intriguing?
- What makes it stand apart?
- What does this idea have that others are lacking?

Consider possible spin off ideas that may be generated.

4. Improve and strengthen the ideas by describing ways to overcome the limitations listed.

5. Repeat steps one through four for the remaining solutions.

ALoU is an easy tool that everyone can use, whether in a group setting or individually. Some ideas that have made it this far will be used, others will not. ALoU is simply a method that gives feedback for the purpose of improvement. Use this method with your students. It brings out the best in ideas and helps students make a balanced decision regarding which ideas to pursue. The chart below should be drawn on your blackboard.

Solution	Advantages	Limitations	Unique Qualities	Overcoming Limitations

Activities & More Activities

In addition to the problem-solving techniques in the previous section, you may want to try other activities to stimulate creativity.

This section contains various student activities. These activities will help your students further develop the six characteristics of inventors. For instance, the "Exploring a Machine" activity will develop their inquisitiveness. Choose the activities that will best fit the level and needs of your students. Most are designed to be completed in a classroom setting without the use of worksheets.

Invent a Game

This lesson will help children understand that an invention can be many things, including something enjoyable for them. It will help them think about the fact that an invention is *not* always something mechanical.

Step 1
Prepare the materials. Obtain several games as examples of this lesson, such as board games, card games, dominoes, dice, etc. Photocopy the activity sheet following this page for each student.

Step 2
Show the students the examples of games. Explain to them that some games have a game board, such as chess, and some games do not, such as jumping rope. Ask your students to brainstorm with you to make a list of 30 different games on the chalkboard. Remind your students to include all types of games, not just all board games or all video games.

Step 3
Choose one of the examples that you brought in to class as your demonstration game. Try to select one that most children would know. Erase the games on the chalkboard and draw five columns titled: name of the game, object of the game, number of players, items needed to play and instructions & rules. Have your students help you fill out these columns for your demonstration game.

Step 4
Hand out the activity sheet on the following page. Ask each student to invent his or her own game and to fill out the activity. This activity sheet can be done in the classroom (individually, with a partner or with a group) or it can be done individually for homework.

Step 5
If time permits, this activity can be taken one step further by having the students actually create one or more games in art class.

Invent a Game
Activity Sheet

You can invent your own game! Use the table below to help you design a game.

1. Begin by thinking of what the object of the game will be. Will it be physical like charades? Will it be a board game like chess?

2. Now, think about what items are needed to play the game. Will your game need dice, game pieces, paper & pen, board, space, imagination, cards, etc.?

3. How many players (will you need two or more)? Can there be partners or teams?

4. How do you play the game (instructions)? What can and can't you do (rules)?

5. Think about the object of the game, the items used and other details to help you create a name.

Object	Materials	Players	Instructions	Name

Now that you have got it all worked out, draw a sketch of the game board and/or game pieces in the box to the right!

Exploring a Machine

The goal of this lesson is to help children understand and think about the way things work.

Step 1
Prepare the materials. Obtain five old objects or machines, such as a telephone, hair dryer, radio, toaster, clock, answering machine, typewriter, VCR, etc., that are no longer needed. Remove any dangerous or messy parts, such as typewriter ribbon. Prepare five sets of tools including screwdrivers, small wrenches, pliers, etc.

Step 2
Divide your students into five groups. Tell your students that although an object or machine may appear simple on the outside, it can be quite complex inside. Explain that in order to find out more about how something works, they may want to take a look inside. For instance, scientists often dissect things to find out more about them. Let your students know that like scientists, inventors need to be aware of how something works. This helps inventors in their own inventing process.

Step 3
Give each group one machine or object and one set of tools. Help them prepare a work area covered with newspapers. Instruct your students to carefully take apart the machine and inspect what is inside. Ask them to record what they found, what they learned and how the machine works.

Step 4
Have each group share their results with the rest of the class and record their findings on the blackboard.

Box of a Thousand Inventions

The goal of this lesson is to show that everyday objects can provide the inspiration and materials needed for an invention. This lesson can also show that many inventions can be created to resolve one problem. This lesson will help students break away from a traditional way of looking at common problems and propel them into the instinctive and wild world of their own creativity.

Step 1
Prepare the materials. Obtain five boxes. In each box, place the same common objects. The box could include the following material: paper cups, paper plates, straws, clothes pins, paper clips, a funnel, a ball of string, nuts, bolts, PVC pipe, marbles, a section of garden hose, rubber bands, plastic milk jug and anything else you can imagine.

Step 2
Divide the class into five groups and give each group a closed box. Explain to your students that common objects can solve various problems. For instance, a milk jug can be cut into a holder for pens and pencils; it can be made into a tunnel for a hamster; or it can be made into a watering can for plants.

Step 3
Ask each group to create an invention using some or all of the objects in their box. The invention must solve an individual or a group problem. To add more challenge and excitement to the lesson, ask all of the groups to solve the *same* problem. For example, "How can you catch an insect without hurting it?"

Step 4
If time permits, you can add language arts activities to this lesson by asking the groups to write an advertisement, slogan and/or jingle for their invention.

Step 5
Ask each group to demonstrate their invention and explain how it solves their problems. If they have completed the additional activities described in step 4, ask them to share those as well.

Role Models

In addition to teaching your students the skills they need to think creatively, you can motivate them to become inventors by providing role models. Below is a description of three role models, Jerome Lemelson, Marvin Stone and Ruth Wakefield, whose creativity can serve as inspiration. Share this information with your students to broaden their ideas about *what* is an invention and *who* is an inventor. This activity can be followed by the Inventor Profiles Essay Contest.

Role Model #1—Jerome Lemelson

Jerome Lemelson's more than 500 patents have earned him the title of one of America's most prolific inventors ever. He worked in industrial engineering for several years. In the mid-1950s he switched occupations and became a professional inventor.

After receiving his first patent in 1955, Lemelson was receiving patents at the rate of one per month for an astounding 20 years! He received patents for fun to serious inventions, such as cut-out toys on the back of cereal boxes, magnetic tape drives used in Sony Walkmans, talking thermometers for the blind, automated warehouses, robots and scanners used by department and grocery stores.

How did he come up with ideas for over 500 patented inventions? Lemelson got his ideas from constantly looking for problems to solve. Reading magazines and newspapers, and listening to experiences of others, provided him with many problems to solve. Sometimes, he woke up in the middle of the night with the solution to a problem he had been thinking about!

Role Model #2—Marvin Stone

Marvin Stone was the inventor of a very important invention, making every drink more enjoyable and more fun—the drinking straw. He also invented many other products such as a pencil sharpener, a fountain pen holder among others; however, he is best known for his straw.

In the late 1800s, Marvin Stone manufactured paper cigarette holders in a Washington, D.C. factory. Stone often stopped to have a refreshment after work. Many people used a straw so that their hands would not have to touch the glass of a cold beverage. Before 1888, a straw was made of a wild grass. Unfortunately the taste of the grass usually infected the drink.

Stone's paper cigarette holder's gave him the idea of creating an artificial drinking straw. Stone made several artificial paper straws for his own use. When other patrons saw his straw, they wanted their own. Shortly thereafter, Stone had designed a paper straw that was coated with paraffin to keep it from becoming soggy, patented it and sold it for use in all drinks.

Role Model #3—Ruth Wakefield

In August 1930, Ruth and Kenneth Wakefield purchased the 221-year old Toll House Inn. In the early 1700s, the Inn was established on a route between Boston and New Bedford and catered to passengers that waited (and ate) as their stagecoach driver paid the toll and changed horses. After purchasing the Inn, the Wakefields were determined to restore it and open a restaurant. Ruth Wakefield was in charge of the menu and she began experimenting with cookie recipes. She used the popular American recipe for Butter Drop-Do's and then broke up a Nestle semi-sweet chocolate bar into small pieces and added it to the batter.

Wakefield expected the chocolate to melt and was surprised to find that the chocolate remained mostly intact. She called this new cookie "chocolate crispies" and it became a favorite among customers at the Toll House. The recipe for the cookie was given out on a Boston radio show and proceeded to spread through word-of-mouth. Ironically, Nestle had been considering discontinuing its semi-sweet chocolate bar because of poor sales. However, they decided to send an executive to the one place where the bars were selling well—Boston. In Boston they learned of the cookie recipe. By 1940, Nestle had purchased the "Toll House" name and before long began making chocolate morsels carrying Ruth Wakefield's recipe on the back of the package which remains today.

Inventor Profile Essay Contest

Your students can familiarize themselves with the invention process by learning about an inventor. Students should choose several inventors, learn about each one and then select one inventor about whom to write an essay. Next, students should prepare an oral presentation, working alone, in pairs or as a team. The class can vote on their favorite presentation. Use the list of inventors, questions and oral activities below as suggestions. Write them on the chalkboard or provide them as a hand-out (you can cover this paragraph and photocopy the page as a hand-out).

Inventors and their Inventions: Learn a few facts about three inventors (below are suggestions but you can choose any three inventors). Choose the one that is the most interesting to you for your project.

Alice Chatham—space helmet

Thomas Edison—phonograph

Mary Dixon Kies—weaving method

Fred Morrison—Frisbee

George Nissen—trampoline

Marie Curie—prototype radiation counter

Richard Hollingshead—drive-in movies

Martine Kempf—voice-controlled wheelchair

Lady Mary Montagu—smallpox inoculation

James Naismith—the game of basketball

Essay Questions: Write a one- to two-page essay about your inventor. Consider the following questions. What is the name of the inventor and his/her invention? What date was it invented? How was it invented? What was happening in the world during the time of this invention? Is there a connection between world events and the invention or the inventor? What obstacles did the inventor have to overcome? How has this invention changed our lives? What other inventions did he/she invent? How was the invention transformed in later years? What other innovations has this invention inspired?

Oral Presentation: Prepare a one- to three-minute oral presentation about your inventor. You can read excerpts from your profile; however, you should think about a creative way to present what you have learned about your inventor. You can bring in his/her invention and describe what it was originally made of and what parts posed particular problems. You can present a skit that dramatizes a special event in the life of your inventor. Try to incorporate visual aids such as a time line, photographs, drawings, dioramas or even a slide show.

Finding an Inventor Mentor in Your Area

You can administer the Inventor Mentor Program by inviting five mentors to visit the class for several weeks. Be sure that all interaction is supervised.

Break the class up into five groups. Ensure you provide enough time for each mentor to meet with his or her group. Tell students to record information about their meetings and what they have learned from their mentor in their journals. Encourage students to ask their mentors specific questions about their individual inventions, the inventing process and creative thinking.

Places to contact for possible inventors who may be interested in becoming mentors:

- local and regional inventor clubs or organizations
- national or state inventor organizations
- a local library or city hall (may have displayed exhibits of local inventors)
- a local museum or science center
- companies (e.g., research or manufacturing companies) in your area
- neighbors or friends
- local colleges and universities
- radio, newspaper or television stations (science and/or technology departments)
- schools
- the World Wide Web.

Note: Please be sure to have any interaction between a mentor and a student supervised by a parent, teacher or guardian.

Inventors Club

In order to further stimulate your students, you may want to encourage them to form an Inventors Club. You could be the sponsor for this club. The club would enable your students to provide support for one another's ideas. Furthermore, the club would be another outlet for their creative minds.

The club can meet after school, weekly, bi-weekly or monthly whichever, is appropriate. Ensure that all members of the club have their parents fill out a permission slip allowing them to stay after school.

Each member of the club should keep an inventor's journal. Club members should brainstorm and critique ideas during club time. This will be a helpful preparation for the Young Inventor's Competition.

Club members can participate in various additional activities in order to practice their creative thinking skills. By reading about creative thinking, each club member could take turns presenting and facilitating a creative thinking exercise with other members. Furthermore, club members may want to take field-trips to various museums and businesses to further stimulate their imaginations.

One activity that may be particularly useful for club members would be to role play the day of the competition. Each member of the club may want to prepare a sketch, design or model for their presentation well before the day of the competition. Have the other club members play the role of judges and critique each presentation using the criteria listed on the entry form. Remind students that the point of the critique is to provide constructive criticism, *not* verbal attacks. The suggestions provided to each member can then be used to improve upon the presentations before the day of the competition.

Depending on the motivation of the club members, the club could be continued well beyond the day of the competition. Club members can share with each other how they used creative thinking techniques to help them in their courses. Continued practice in creative thinking will be an immeasurable asset to all students involved in their school work and in future careers.

Young Inventors

Inventing 101 — Handouts for Participants

Handouts for Participants

After you have practiced brainstorming with your students and carried out other problem-solving and creative-thinking activities from this kit, they will be ready to begin thinking about their own invention.

In order to help your students with the Young Inventor's Competition, photocopy and distribute the following handouts. These worksheets will take your students through the inventing process step-by-step. You can photocopy and distribute the entire section, or you can distribute only selected handouts. Steps 7 and 8 in particular may be reserved for older ages, gifted students and/or extra credit.

What is an Invention?

in·ven·tion *n.* **1.** *U.S. Patent Laws.* a new, useful process, machine, improvement, etc., that did not exist previously, and that is not obvious to persons artfully skilled in the field.

An invention can be many different things. An invention can be something completely new, never thought of before or it can be an improvement of something that already exists. It can be something that solves a serious problem like the heart pacemaker or it can be something fun such as frisbees, trampolines and Eskimo pies. Or, inventions can be something as practical as Apple computers, paper clips and ball point pens.

Just think of all the inventions around you right now as you are reading this description. Remember the definition, "a new, useful process, machine, improvement, etc." How many items could you come up with? It is really incredible that we are surrounded by so many different inventions that make our everyday lives possible and easier.

Inventions are often taken for granted. For example, how many times have you stapled sheets of paper together and actually thought about who invented the stapler, what it first looked like and how did people get by without one? It is difficult to pay attention to all the inventions around us, because there are so many of them!

Do I Really Need This?

To give yourself a better idea of just how important inventions are, list as many inventions as you can think of in 1 minute.

Date: _____

1. My list of inventions:

_____

_____

_____

_____

_____

2. Pick any one invention that you use everyday and try to go an entire day without using it. The invention that I have chosen not to use is:

_____

3. At the end of the day, list the ways not using the invention affected your day.

_____

_____

_____

_____

4. What did you do differently today without the invention?

_____

_____

_____

_____

This activity will help you have a better appreciation of inventions and how they impact your life.

Myths of Inventors and Their Inventions

Put on your safety glasses because we are about to shatter some myths about inventing.

Myth #1
The prevailing myth is that it takes a tremendous genius or a mad scientist to be an inventor.

Smash! That is what Hollywood would like you to believe. Although there are geniuses and mad scientists who are inventors, there are also a lot of normal, regular people like yourself or your next-door neighbor who are inventors.

The dictionary has the following definition for an inventor:

> **in-ven-tor** (in ven't r), *n.* a person who invents, especially one who devises some new process, appliance, machine, article or improvement.

That is it! It does not say that you have to have a Ph.D., work for a corporation, be a physicist or a chemist to be an inventor. You don't need a laboratory with expensive machinery and computers. You already have everything you need to be an inventor. You need your observation skills and a willingness to work hard. Why was Thomas Alva Edison, America's most prolific inventor, such an effective inventor? Perseverance. Edison once proclaimed, "Invention is 99 percent perspiration, and one percent inspiration." Thomas Edison turned failure into success. It is this quality that allowed him to be fearless of taking risks or of failing. If something didn't work for Edison, he simply learned from it.

Myth #2
Another widely held myth is that an invention has to be something revolutionary, something new, like a cure for cancer, a satellite or a computer.

Smash! The fact is that many patents issued are actually for inventions that are improvements or modifications to an existing invention. An easy way to understand this concept is to look at the airplane. Compare the Wright Brothers' Flyer airplane to a Boeing 747. The Wright Flyer was a revolutionary invention, the first of its kind. However, new inventions in planes today are largely descendants of this invention.

The modifications to the existing invention can be something quite ordinary. For instance, imagine all the patents that exist for a Boeing 747. Too many to think of? Well, just imagine all the patents involved in just the seats of a 747 (seat belts, fasteners to secure them to the floor, reclining mechanism, headphone jacks, volume control dials, personal flotation devices, the frame that your cushions fit into, the material in the cushions, the fabric that covers the cushions, your food tray, the sleeve that holds the magazines, the elbow rests and so on). All these things are inventions. They may not seem exotic or revolutionary, but there was a need for each and every one of these things.

The Life of An Invention

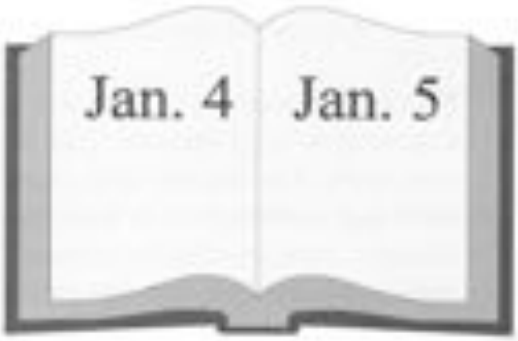
An Overview of the Inventing Process

It all starts in your head.

The lives of all inventions begin as someone's idea. Although people have many good ideas, not all turn out to become inventions. The ideas that do go on to become inventions arrive there by a variety of means. There is no one correct course to steer an idea to becoming an invention, but the steps described below provide an overview of the paths successful inventors have taken.

Inventor's Journal

This is the place to turn to when you look back on your invention and wonder, "what was I thinking?" Thomas Alva Edison, the most prolific inventor in the history of the United States, left behind close to five million journal pages that allow us to glimpse inside his mind and try to see exactly what he was thinking. These pages contain the ideas behind 1,093 patented inventions as well as laboratory records, early drafts of patent applications, letters, photos of models and other telling memorabilia.



An inventor's journal is where ideas are described and drawn. It is a kind of life history for your inventions. You can trace an invention from the day it was first conceived all the way through to patent filing. An inventor's notebook includes various items: successes ("Eureka"), failures ("back to the drawing board"), expenses, observations, insights, experiments, comments, doodles, poems or anything else that can help you think creatively.

Master Plan for Your Invention

Inventing can be a very complex and intricate exercise. This is where you can make it easy on yourself. Once you have chosen an invention to build, it is wise to come up with a master plan. A master plan determines the life stages of your invention. The first step in your plan is to research whether or not an invention like yours exists already. Once that step has been completed, you may choose to build your invention in order to determine whether or not it works. If your invention does not work, the plan would call for you to go back to the drawing board and come up with alternatives. If your invention does work, the next step may be to test the response of people to your invention. Will people like it, buy it and use it?

From Idea to Product

The physical stage of an invention is the model. Building a model helps prove that the invention works. The model is constructed keeping in mind the who, what, where, how and whys (i.e., who/what will use it? how will they use it?). It should be built in the simplest way possible using the simplest materials possible. If a model is built, it can be tested to ensure that it works and to ensure that users will like it.

What's in a Name

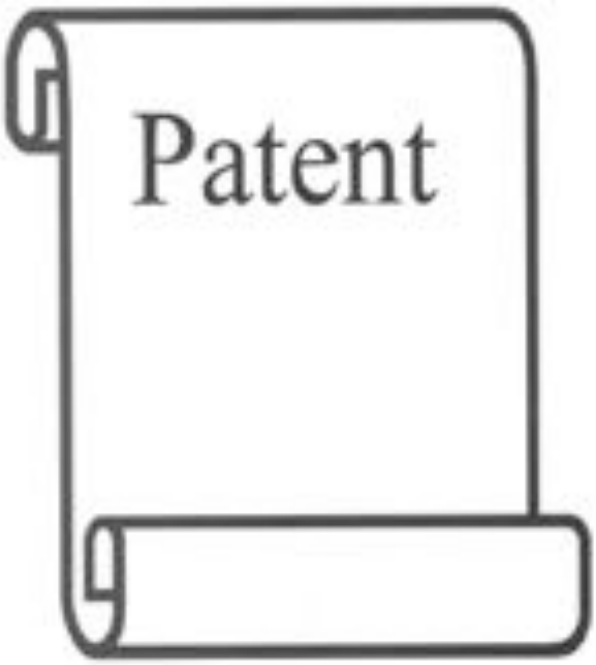
A name, especially one that is clever and catchy, will help create enthusiasm and make it much easier for people to understand and remember your invention. One common method for naming an invention is to use the components or ingredients of the invention. Or, the name can refer to some special feature of the invention. You could name it after yourself or include initials or acronyms. The name can be something inspirational.

It is important to remember that the name you choose may have a lot to do with what people think of your invention. You, the inventor, must decide how you want people to think of the invention and search for a name that helps convey this.

Patent

A patent is a trade made between you, the inventor, and the United States government. It takes a lot of time, effort and money to get a patent. A patent requires that you make public all the details and technology of your invention. These details should be so complete that based on your patent, someone could come along and build a working model of your invention.

After your patent is granted, the United States Patent Office publishes the patent and makes it available to anyone. By supplying all this information about your invention, the government hopes to help other inventors overcome problems with their inventions and inspire even better inventions by showing how patented inventions work.



What is the point of obtaining a patent from the government? In return for making your invention public, the government grants the inventor the exclusive right to make and sell the invention for a specified period of time. Depending on the type of patent granted, the exclusive right to make and sell your invention can be from three and a half years to seventeen years. As the inventor, you are still responsible for making sure that nobody is illegally copying your invention during the allotted time period.

Not every inventor gets a patent for an invention. For instance, the formulas for Coca-Cola and Silly Putty have never been patented and these highly guarded secrets are known to only a select few individuals. This has allowed these products to be made for decades and decades without other companies knowing the exact formula. Had a patent been issued and expired, anyone could look it up and copy the formulas and sell the products without punishment. So, some inventors get a patent to ensure they have exclusive rights to make and sell their invention, while other inventors don't get a patent to ensure that no one will know their secrets, at least until someone invents their invention.

Marketing

If you want to make money from your invention, you will need to get it to the people who will want to buy it. Generally there are two ways to accomplish this: sell your invention to a company who will manufacture and sell it, or start your own company to manufacture and sell your invention.

Either way, once you have made your product, you will want to publicize its existence so that potential buyers will learn about it. This publicity effort is called marketing. Marketing decisions concern the appearance of the product, its name, packaging, sales brochures and advertising.

Planning an Invention

Why Plan? The process of inventing requires many steps. Your plan should detail what you are going to do, how are you going to do it, what order you are going to do it in and the results that you expect. Many unpredictable things can occur during your invention process. As a result, it is difficult to assign a time schedule for the various steps. You should give yourself plenty of time for each step. Instead of setting a schedule, try to set progressive goals to help you realize when to move onto the next step. Don't forget to record all the steps and goals in the journal.

It is important to note that not all goals are readily evident at the beginning of the invention process. It is acceptable to wait until one goal is accomplished before setting the next.

What steps should your plan include? The following is an outline of steps. More details on each step follow.

1. Create a journal. As you complete steps two through ten, record everything in your journal.
2. Identify problems that need solving.
3. Use your brainstorming technique to think of as many ways as possible to solve each problem.
4. Select the problem and idea for a solution that you think is most likely to be successful.
5. Research your invention (i.e., has it already been invented, what materials will you need, etc.).
6. Draw your invention.
7. Build a model of your invention (optional).
8. Test your model (optional).
9. Name your invention.
10. Design a presentation.

Keeping an Invention Journal

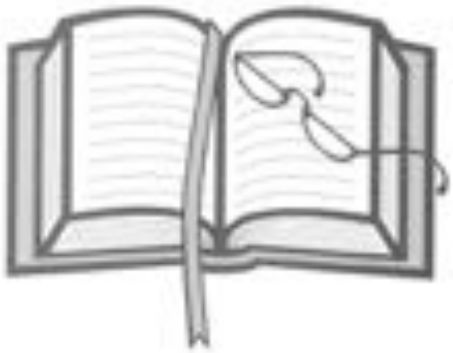
In order to create an invention you must look for problems and how to solve them. But before you begin looking for problems and generating ideas on how to solve them, you need a place to record the enormous amount of information you will be coming across—an invention journal.

You may think that only experienced inventors keep journals. However, whether you are a beginner or an expert, you should keep a journal. The best time to start keeping a journal is now, right now. Get a notebook and start recording your ideas. You may want to get a three-ring binder so that you can include new pages and handouts in the journal.

The invention journal should be a detailed log of problems that need solving and all the work you do on your invention. This can include all of your ideas, experiments, research, tests and results as well as any correspondence with inventors or others who have helped you along the way. You may also want to keep handouts, documents, photographs and drawings in your journal.

State the problem(s) you are attempting to solve in your journal. Next, provide a detailed and concise description of your ideas on how to solve the problem—your invention. You may have more than one invention to solve a particular problem, in which case, all of your ideas for each invention should be described in detail. Do not leave room for guesswork in your description. Do not assume that you will be able to remember any details. Write everything down. Remember, you may have to repeat some of the steps in making your invention, so the notes in your journal should guide you through the steps. Your journal will benefit you and others who are interested in your invention.

Be sure to include the date, time, location, type of work and ideas you had while working on your invention in each journal entry.



In addition to writing in your journal, you can also draw your ideas. Including sketches will help you and others reading your journal understand your invention. These drawings do not have to be fancy or elaborate. They just have to be clear. Your drawings should show all the essential features. If size, shape and particular parts or materials are important, they should be clearly indicated on the drawing, as well as in the written description. If one view is not adequate, use several views, clearly identifying and cross referencing them in your written description.

At the end of your description, have someone trustworthy (e.g., your parent or teacher) sign it as a witness to prove the work and ideas are your own. A witness should read over your description and understand your invention and how it works. If they do not understand it, you may need to edit your description and drawings. Keep your invention journal in a safe place.

Sample Journal

On the first page or front cover of the journal, you should include the following: name, address, school or organization sponsoring the contest and mentor (if you have one). Inside the journal, use the format that works best for you. Always be sure to include the date, time, location and notes for each entry. One way to organize your notes in your journal is to draw a vertical line two to three inches from the margin. On the left side of the page, write down notes about your invention. On the right-hand side, you can include drawings or photos. Have a witness (e.g., teacher or parent) sign your journal to prove that your work and ideas are your own (this signature should be on the last page of a journal entry that describes your invention and all of the related research). You should keep a journal even if you do not enter a contest or the contest has ended.

Date:_____Time:_____
Location:_____
Notes:_____

Drawings or Photos

Date:_____Time:_____
Location:_____
Notes:_____

Date:_____Time:_____
Location:_____
Notes:_____

Read in confidence and understood by me.

_____ _____

(Signature of witness) *(Date)*

Finding a Problem

Inventing is a creative act. Anyone can invent. You must think creatively and you must keep an invention journal in order to begin the first step of the invention process—finding a problem.

Looking for Needs

Now, it is time to invent. Don't know where to start? You have probably already started, many times. Try to recall a situation where you were trying to do something and were having difficulty doing it. You may have thought to yourself, "I wish someone would come up with a do-hickey to help me do this." Well, that is the first step in inventing—finding a need.

To identify some needs, try the following exercise. First, carry around your invention journal and write down your thoughts and observations throughout the day. Spend time (it may take several days or weeks) paying attention to your normal day-to-day activities and what possible needs could be found here. You may be thinking that studying your daily habits is not exciting or exotic; however, you are more likely to recognize needs during your own activities because you are so familiar with them.

For example, if you were to try to invent something exotic for space exploration, you would first need to do a lot of research to familiarize yourself with what already exists and what is needed in space exploration. Next, you would have to become familiar with the criteria that the invention would have to meet (for example: dealing with no gravity, extremely cold temperatures, intense radiation etc.). Therefore, it is easier to start your invention career looking for needs down here on earth, in your own environment, something you know well. This includes your school environment, your home environment, any hobbies you have or sports you play. Do not forget to write down all of your ideas and observations in your invention journal.

The next step after identifying this need is to fill it.

Filling the Need

Filling a need is the stage at which most would-be inventors stop. Remember Thomas Alva Edison's famous saying: "Invention is 99 percent perspiration, and one percent inspiration." Well don't be afraid to perspire. Inventing is hard work.

Solving Your Problems Through Brainstorming

Once you have spent several days studying your day-to-day activities and identifying problems, it is time to explore solutions. Select three perplexing problems that are likely to produce good solutions. Give yourself four minutes per problem to write down at least eight solutions. Do not judge any solution. Write down as many solutions as possible, including ones that are wild. You can combine or build on previous solutions. Be creative. If you have learned other problem-solving techniques (e.g., SCAMPER, Forced Fit), try them now to generate ten more solutions. Write these on separate pages. Include your list in your invention journal. Ready, set, go!

Problem 1:

Solutions:

1.

2.

3.

4.

5.

6.

7.

8.

Problem 2:

Solutions:

1.

2.

3.

4.

5.

6.

7.

8.

Problem 3:

Solutions:

1.

2.

3.

4.

5.

6.

7.

8.

Selecting a Problem and a Solution

What Makes a Good Solution?

From your past exercise, you should have generated many solutions. Read them over. Think about which ones you could create with simple materials. Select between three to five solutions that may be workable. Write them into the column labeled "solutions" below. Now, for each solution, fill in its advantages (the strengths and potentials of this solution), limitations (the obstacles of this solution), unique qualities (the creative aspects of this solution) and ways to overcome the limitations in the chart below. State all of your limitations as questions (e.g., How can I make it small enough to...?).

	Solutions	Advantages	Limitations (questions)	Unique Qualities	Overcoming Limitations
1					
2					
3					
4					
5					

Looking at the chart above, you can evaluate and compare the various solutions. Select one that has many advantages, several unique qualities and limitations that you feel you can overcome. And, of course, select a solution that will be fun for you to work on. Include this page in your invention journal.

Selecting a Problem and a Solution

What Makes a Good Solution?—Continued

You have identified many needs in your daily life. There are many problems which can use fixing. But how do you know if your solution is the one you should work on? Ask yourself the following questions:

1. Is my idea original? _____ Is it creative?_____

2. Do others need my idea?_____

   If yes, who (e.g., students, parents, etc.)?_____

3. Does my idea solve a problem?_____

   If yes, how?_____

   _____

4. Is my idea affordable?_____

5. Can I find materials to make my invention?_____

   If yes, where?_____

   Is it simple?_____

6. Will I be able to make a model of my invention (optional)?_____

If your answer to these questions was "yes," you have got a good idea (if your answer was "no," try another solution). Include this page in your invention journal. And, now it is time to get to work on your invention!

4

Researching Your Invention

The two main steps in researching your invention are:

1. Determine if it exists already.
2. Record your findings in your journal.

Once you have identified a problem and a possible solution, the next step is to determine whether or not someone has thought of a similar solution. This type of research can save valuable time and effort. Why try to invent something that has already been invented? You can use several techniques to research whether your invention has been invented by someone else. If your invention has already been created, try choosing another solution or idea, or try improving upon this invention. Record all of your findings in your invention journal.

Patent Search

You can conduct a patent search to find out whether or not something has been invented before. Patent searches can be conducted by visiting the Washington, D.C. area's U.S. Patent and Trademark Office's Scientific Library. There you can search and examine more than five million U.S. patents! Outside of Washington, D.C. you can do a patent search at one of the Patent Depository Libraries located in many states. Call your local library for more information.

A patent search is only useful if the invention has been patented. Some inventions simply can't be patented (e.g., perfume formulas) or the inventor may not have filed for a patent (e.g., the formula for Coca-Cola) in order to keep the invention secret.

Your Hometown

There is a lot of information that you can find out by yourself in your own hometown. The idea is to investigate all the different places your invention may appear. In doing this type of research, do not go into detail describing your invention. Someone may like it so much that he or she might try to steal your idea. Ask your questions in general terms so as not to divulge too much information about your invention. Describe your invention by function (what problem it should solve), don't describe it by specifics such as what material it is made of or how it works.

Family and Friends
Describe the problem your invention solves and ask your family and friends what they use to solve it. Remember to record notes in your journal!

Stores
Visit area stores to find out if they sell an invention similar to yours. Go to the

departments where your invention may be displayed and look for it there. If you cannot find it, ask sales people if they have seen a similar product. Look through the store's product catalog as well.

Users
Visit places where your invention might be put to use. Use your imagination here. You may not have thought of all the uses for your invention. If you do not see your invention, ask someone what they would use to solve the problem your invention addresses.

Advertisements
Look through advertisements in magazines and newspapers for an invention similar to yours. Try to focus your search on magazines and newspaper sections that deal with products similar to your invention.

Manufacturers
Contact manufacturers who might build a product similar to your invention. Ask to see their catalogs if you think they may have something similar to your invention. Go to your local library to see a copy of the Thomas Register (lists names and addresses of manufacturers).

Repair Shops
Contact repair shops that may repair products similar to your invention. Ask the repair person whether they know of a product that is similar to your invention.

Internet
The World Wide Web is a great place to research your invention. One place to start is I.B.M.'s data base of over two million inventions that have been patented since 1971. The address of the I.B.M. patent site is <http://www.ibm.com/patents>.

You can use the chart below to record your findings. Be sure to include it in your Inventor's Journal.

Date and time	**Source** (library, catalog, neighborhood, magazine, store, Internet)	**Person contacted** (phone number or e-mail address)	**Does a similar product exist?** yes/no	**Other information**

Drawing Your Invention

A very important step in creating your invention is your drawing. All inventors use drawings to show how their inventions look and work. Draw your invention from different angles or in the different stages of it working. Show and label all of the parts clearly to help others understand how it works. Make your drawings colorful. Make several sketches on scrap paper before you do the final one (you may have already made sketches in your journal). Use this page for your final drawings and include it in your invention journal.

In these boxes, sketch your invention. Include three views (e.g., front, back, side, top or bottom) or three stages, whichever shows the most information about your invention.

Remember, label all your parts clearly and make your drawings attractive!

Building a Model (optional)

If your invention can be made easily from inexpensive materials, you may want to make a model so that it may be tested. Remember, the best inventions work with the fewest and least expensive parts, so use your imagination. To make a model, look at your drawings to help you determine what materials you will need. Think about some inexpensive materials you could use such as clay, wood, paper, cardboard and paper mache. Check several locations to obtain the lowest cost. List your materials and costs below.

	Materials	**Costs**
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____
6.	_____	_____
7.	_____	_____
8.	_____	_____
9.	_____	_____
10.	_____	_____
11.	_____	_____
12.	_____	_____

You may want to get a book from the library about making models or ask a parent or mentor to help you (as long as you participate in making the model and ensure the invention ideas, illustrations and written descriptions are your own). Use your list of materials and your drawings to make your model. You may be able to make a representational model (one that does not actually work, but represents your idea). Or, you may be able to make a functional model. If your model functions, you can test it.

Testing Your Invention (optional)

Testing a model will help you determine if it is safe and if it addresses the problem. Use these pages to describe what steps you took in testing your invention and record your results. Make changes to your invention if you think it will work better and record the changes. Perform the test again if you have made a change. Include these sheets in your journal.

Test 1

Date_____

Test (Describe how you perform the test.)

_____

_____

_____

_____

_____

Results (What happened? Did your invention solve the problem?)

_____

_____

_____

_____

_____

Changes (What changes did you make to your invention to make it work better?)

_____

_____

_____

_____

Test 2

Date_____

Test (Describe how you perform the test.)

Results (What happened? Did your invention solve the problem?)

Changes (What changes did you make to your invention to make it work better?)

Test 3

Date_____

Test (Describe how you perform the test.)

_____

_____

_____

_____

_____

Results (What happened? Did your invention solve the problem?)

_____

_____

_____

_____

_____

Changes (What changes did you make to your invention to make it work better?)

_____

_____

_____

_____

_____

Testing Your Invention (optional)

Continued

In addition to testing if your invention works, you may test whether or not people will use it. Ask your friends, parents, neighbors, etc., to fill out this questionnaire based on your model or your descriptions and drawings. You can either give them this form to fill out (make copies) or you can ask the questions verbally and record them yourself. Include the responses in your invention journal. Obtain your parents permission and supervision for the interviews. After completing your interviews, make any changes to your invention that you think will make it better, based on the responses that you received during the interviews.

Invention Interview

Name _____

Occupation _____

1. Have you ever used an invention such as this before?_____

If yes, what type, when and how often?_____

_____

_____

2. If you owned this invention, would you use it?_____ If yes, how often?

_____

3. What is particularly positive about this invention? _____

_____

4. What problems do you foresee in using this invention?_____

_____

5. What would make it more useful to you?_____

_____

Selecting a Name for Your Invention

Examples

It is a success! You have invented something and now you have the privilege of giving it a great name. There are many different ways to come up with the perfect name. Below are some of the methods used to come up with names, followed by some examples.

Function
An invention can be named for the way it works.

eraser	radio
elevator	snow board

Inventor
Many inventions are named after the inventor.

Post Cereal	Ford Automobiles
Levis Jeans	Ferris Wheel

Witty
An invention can have a funny name. These types of names are likely to stand out in a consumer's mind.

frisbee	life saver
sneaker	zipper

Descriptive
Descriptive names characterize the invention.

Play-Doh	key board
burglar alarm	drinking straw

Material or Ingredient
Sometimes the materials or ingredients that comprise the invention are also used to name the invention.

silicon chip	eye glass
popcorn	hot air balloon

Abbreviations
Inventions can also be named after an abbreviation.

VCR	PVC pipe
CD player	TV

Selecting a Name for Your Invention

Your Turn

Selecting a name is very important, because it is a key factor in marketing the invention. It will influence people's decision whether or not to buy and use your invention. A good name will help people remember your invention. A great name gives your invention personality. Write as many names as you can for your invention in each category and include this page in your journal.

Function - How does it work?

_____

_____

Inventor - What is your personal name?

_____

_____

Witty - What would be a funny name for it?

_____

_____

Descriptive - What words best describe it?

_____

_____

Material or Ingredient - What is it made of?

_____

_____

Abbreviations - What initials could describe it?

_____

_____

Now, on the lines below, write your *five favorite* names.

_____

_____

Choose your one favorite name and write it in the space below. My invention is named:

Designing A Presentation

You have done so much work for your invention, from keeping a journal to solving problems to drawing and naming. Now, it is time to create a presentation that will display your invention and all of the work that you put into it. One of the best ways to make your presentation is to use a backboard which shows all of your steps in the invention process.

Below are instructions on designing a presentation backboard, but this is your project, so if you have a better idea, use it! Be creative.

Materials:

1. 2 Poster Boards,
2. Markers, Crayons and/or Sticky Letters,
3. Tape, Glue and/or Pushpins,
4. Ruler,
5. Colored Paper,
6. Any other craft materials that may be useful!

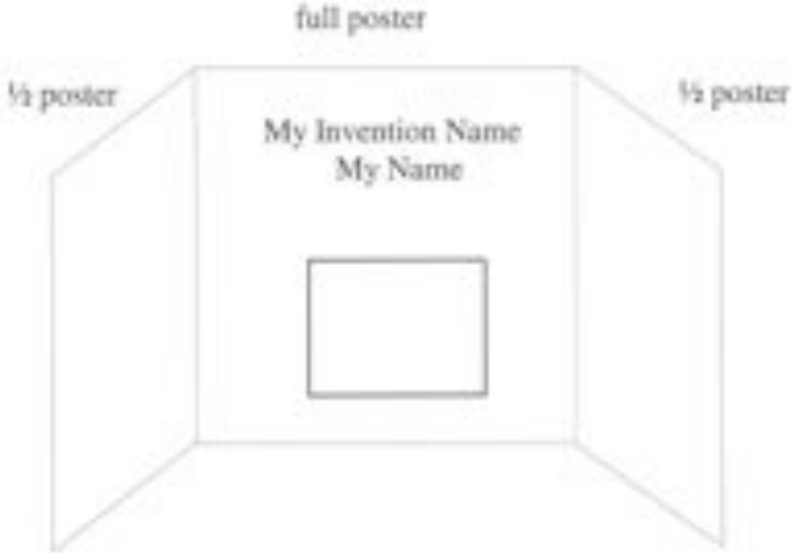
Instructions:

1. Cut one poster board in half and attach each half to the other poster board with tape (see picture on the next page).
2. Use markers, crayons or sticky letters to include the following on your presentation board: your name (or identification number), your invention name, a diagram of your invention with all parts labeled, an explanation of how your invention works and its purpose.
3. Attach photographs and/or drawings of you (if allowed) and your invention. Your photos can show how your invention works.
4. Think of a catchy phrase, jingle, songs and/or poems that highlight the usefulness of your invention and your creativity and include it on the board.
5. You can also attach graphs, magazine articles and newspaper clippings that relate to your invention. Your presentation should show that you put care into making it.
6. You can include a biography of the inventor (if allowed).
7. If you made and tested a model of your invention, you can include the results of your research.
8. A model can be placed in front of the presentation board.
9. Decorate your presentation board with colored paper, markers, ribbons and anything else you can think of to make it attractive and colorful. Remember, it must catch your eye!
10. Record all of the materials and costs involved in making your model in your journal. Place your journal in front (or beside) your presentation. It will be important for judges to see.

Your Presentation Board

Remember:

Make it attractive!
Make it colorful!
Be creative!



If you have a camera, take a photograph of your presentation and include it in your inventor's journal. Your presentation should show onlookers, especially judges, all of the hard work that you have done. Be sure your presentation reflects the best of your invention. It should be attractive and catchy. Your presentation should clearly and easily explain how your invention fulfills a need. The presentation should be a showcase for your creativity and originality. If you have not made a model, be sure that in addition to labeling all of the parts on the diagram, you identify what materials would be used in creating the invention. The entire presentation should be well made and your inventor's journal should reflect your creative thinking skills, your research and your ability to record your hard work.

Designing a Presentation

Continued

Any good presentation will require advance planning. If you are going to use a presentation board like the one below, think about what materials, drawings, words, photographs, etc., you will use to create your presentation. Fill in the specific materials you plan to use. Use the blank board below to help you design the final product. Fill it in to show where you will *place* all of your materials. Include this page in your journal.

My materials:_____

_____

_____

My design:

The Inventor's Quick Checklist

Use the checklist below as a guide to the invention process. It will help you keep track of what you have completed and what still needs to get done. Use a blank sheet of paper to write your own, more detailed reminders. You may want to include this page in your journal.

1. ___ Begin an inventor's journal (preferably a three-ring binder).
2. ___ Practice thinking creatively (e.g., brainstorm) with a teacher, scout leader, etc.
3. ___ Learn about inventors and inventions.
4. ___ Find a problem. Pay attention to what problems arise in your day-to-day life.
5. ___ Solve a problem. Try brainstorming to come up with solutions to problems.
6. ___ Select the problem with the most workable solution.
7. ___ Meet with a mentor (optional).
8. ___ Research your invention.
9. ___ Draw your invention.
10. ___ Determine what materials you need to create your invention.
11. ___ Fill out and return the Young Inventor's Competition Entry Form.
12. ___ Create a model (optional).
13. ___ Test your model (optional).
14. ___ Interview potential users (optional).
15. ___ Compile a list of potential names and select one.
16. ___ Design a presentation.
17. ___ Determine what materials you will need for your presentation.
18. ___ Obtain your materials.
19. ___ Create your presentation.
20. ___ Deliver your presentation to the competition site (do not forget your journal and a model if you have one).

Resources

This resource section lists publications, Internet sites, organizations and competitions that will provide you with information about inventing, inventors, innovation and creativity. Some of the resources are geared towards you, the organizer, other resources, such as *The Little Prince* by Antoine de Sainte Exupery, are meant to inspire and/or inform young readers. Many resources exist for professional inventors; however, we have included the resources that should be most useful and inspirational to young inventors and their mentors.

Many of the following resources can be used in the classroom or at home. Several of the many museums listed are not only appropriate for field trips, but may also provide curricula or other materials that can be used in schools.

BOOKS

Adams, James L. *Care and Feeding of Ideas: A Guide to Encouraging Creativity*. Reading, MA: Addison-Wesley. 1986.

Describes the unconscious mind, the brain, the nervous system, memory and how they work together to enable us to think and act

Adams, James L. *Conceptual Blockbusting: A Guide to Better Ideas*. Reading, MA: Addison-Wesley. 1986, 1979, 1976, 1974.

Details our minds' anti-creative mental "blocks" and the use of "blockbusters" to enhance our problem-solving abilities.

Altshuller, Henry (H. Altov). *And Suddenly the Inventor Appeared: TRIZ, The Theory of Inventive Problem Solving*. Worchester, MA: Technical Innovation Center. 1996, 1992.

Explains 27 practical thinking tools and techniques while working through 78 problems which range in difficulty (answers provided).

Armstrong, Thomas, Ph.D. *Awakening Your Child's Natural Genius: Enhancing Curiosity, Creativity and Learning Ability*. Los Angeles: Jeremy P. Tarcher, Inc. 1991.

Includes practical ideas for activities to do at home, as well as authoritative advice on how to get the most out of children's schools.

Aspen Books & Software
1-800-319-2665; 406-586-3798

Sells books about inventors, creativity, etc.

Baker, Erik and Jane Martin. *Great Inventions Good Intentions: An Illustrated History of American Design Patents*. San Francisco: Chronicle Books. 1990.

Contains more than 500 drawings filed with the U.S. Patent Office from 1930 to 1945.

Baldwin, Neil. *Edison: Inventing The Century*. New York: Hyperion. 1995.
Details the biography of America's most famous inventor, Thomas Edison.

Barr, George. *Science Projects for Young People*. New York: Dover. 1986, 1964.
Contains 39 entertaining, educational experiments for children in junior high or the later elementary grades to perform at home or in the classroom with ordinary materials.

Barr, George. *Science Research Experiments for Young People*. New York: Dover. 1986, 1958.
Contains 40 easy-to-perform experiments/projects for upper elementary to junior high grade levels.

Berger, Melvin. *Simple Science Says: Take One Magnifying Glass*. New York: Scholastic Inc. 1989.
Includes a real, flexible magnifying glass for easy-to-do, fun and educational activities. This book is probably best for 10 year old's and younger.

Bochinski, Julianne. *The Complete Handbook of Science Fair Projects*. New York: John Wiley & Sons. 1996.
Contains information and advice about science fair projects in general and descriptions of award-winning entries.

Bragdon, Allen D. and Marcia J. Moubleau. *Ingenious Inventions of Domestic Utility*. New York: Harper & Row. 1989.
Contains photographs and descriptions of "old fashioned" household inventions.

Brown, Robert J. *200 Illustrated Science Experiments for Children*. Blue Ridge Summit, PA: TAB Books. 1987.

Buzan, Tony. *Use Both Sides of Your Brain*. New York: Penguin Books. 1989, 1982, 1974.
Explains the theory and many practical "mind-mapping" techniques for enhancing creativity and intelligence.

Caney, Steven. *Steven Caney's Invention Book*. New York: Workman Publishing. 1985.
Shows kids how to get started tinkering on their own, presenting information that will help young persons think creatively and get organized.

Carpenter, Thomas. *Inventors: Profiles In Canadian Genius*. Camden House Publishing. 1991.
Describes Canadian inventors who shaped modern inventions (particularly appropriate for young adults).

Carson, Mary Stetten. *The Scientific Kid: Projects, Experiments and Adventures*. New York: Harper & Row. 1989.
Describes 35 fun learning activities for young children—ages 3-10.

Chesman, Andrea. *The Inventive Yankee: From Rockets to Rollerskates—200 Years of New England Inventors & Inventions*. Dublin, NH: Yankee Books. 1989.
Contains more than one hundred stories about "Yankee" inventions.

De Bono, Edward. *De Bono's Thinking Course*. New York: Facts on File. 1985, 1982.
Describes the tools and techniques of good thinking by a leading thinking instructor.

De Bono, Edward. *Lateral Thinking: Creativity Step by Step*. Harper & Row. 1970.
Teaches "lateral thinking"—a way of thinking that produces more creative results than our usual "vertical thinking." This hand book can be used by the individual reader or by a teacher for the sake of the students, using the examples and practice sessions.

De Sainte Exupery, Antoine. *The Little Prince*. San Diego: Harcourt Brace & Company. 1993.
Touches upon the creativity of children versus the literal interpretations of adults. A book for all young readers originally published in French.

DeVore, Horton and Lawson. *Creativity, Design & Technology*. Worcester, MA: Davis Publications, Inc. 1989.
Fosters creative thinking in students by providing teachers with useful information on the creative process.

Diebold, John. *The Innovators: The Discoveries, Inventions and Breakthroughs of Our Times*. New York: Dutton. 1990.
Details the true lives of innovators and their modern inventions.

Editors of Consumer Guide. *How Things Work*. Lincolnwood, IL: Publications International. 1994.
Explains the operations of more than 200 machines, gadgets, instruments and other inventions that are both high tech and low tech.

Edwards, Betty. *Drawing on the Artist Within*. New York: Simon and Schuster. 1987, 1986.
Stresses visual thinking as a means to enhance creativity.

Ehrlich, Robert. *Turning the World Inside Out: And 174 Other Simple Physics Demonstrations*. Princeton, NJ: Princeton University. 1990.
Describes physics demonstrations that cost very little to produce, yet illustrate key concepts in simple and playful ways.

Exploratorium staff and John Cassidy. *Exploratbook: A Kids' Science Museum in a Book*. Palo Alto: Klutz Press. 1991.
Contains more than 50 activities or experiments and the tools to do nearly all of them.

Flatow, Ira. *They All Laughed... From Light Bulbs to Lasers: The Fascinating Stories Behind the Great Inventions that have Changed Our Lives*. New York: Harper Collins. 1992.

Ghiselin, Brewster (ed.). *The Creative Process.* University of California Press. 1952.
Contains writings by innovators describing how they begin and complete creative work in various fields (e.g., art, literature, science, etc.).

Grissom, Fred and David Pressman. *The Inventor's Notebook.* Berkeley: Nolo Press. 1996.
Nolo Press provides self-help law books. Information about this book can also be found on the web at http://gnn.com/gnn/bus/nolo.

Grudin, Robert. *The Grace of Great Things: Creativity & Innovation.* New York: Tickner & Fields. 1990.
Describes the difficulties of a creative thinker in a world hostile to new ideas. It criticizes the mode of thought in universities, colleges, etc.

Hall, Doug. *Jump Start Your Brain: A Proven Method For Improving Creativity Up To 500%.* New York: Warner Books. 1995.
Offers practical, tactical advice to fully utilize the brain's potential—and increases your ability to think, invent and market new ideas.

Herbert, Don. *Mr. Wizard's Experiments for Young Scientists.* New York: Doubleday. 1990, 1959.
Describes the step-by-step procedures and necessary equipment for thirteen different experiments that can be performed at home.

Herbert, Don. *Mr. Wizard's Supermarket Science.* New York: Random House. 1980.
Presents more that 100 pretested science experiments which use materials that are commonly available at grocery stores.

Herrman, Ned. *The Creative Brain.* Lake Lure, NC: Brain Books. 1989.

James, Peter and Dr. Nick Thorpe. *Ancient Inventions.* New York: Ballantine Books. 1994.
Covers world-wide innovation from the earliest stone tools to 1492.

Kayser, Thomas A. *Mining Group Gold: How to Cash in on the Collaborative Brain Power Of A Group.* Chicago: Irwin. 1995, 1990.
Describes methods that emphasize teamwork to enable any size or type of group to reach solutions.

Macaulay, David. *The Way Things Work.* Boston: Houghton Mifflin. 1988.
Uses the humorous analogy of a woolly mammoth to illustrate principles, providing even the least mechanically minded reader a window of understanding into the complexities of today's technology.

Mandell, Muriel. *Simple Science Experiments with Everyday Materials.* New York: Sterling. 1989.

McGrath, Carol Rito and Dagmar Kosack Rutzen and Marian Diana Costello. *Inventions! Inventions! An Integrated Unit of Study*. ECS Learning Systems, Inc. 1995.

Murphy, John. *How to Design Trademarks & Logos*. Oxford: Phaidon. 1988.
Lays out the step-by-step process of creating a graphic identity including design, idea editing, product placement, strategy development etc.

Ontario Science Center. *Scienceworks: 65 Experiments That Introduce The Fun And Wonder Of Science*. Reading, MA: Addison-Wesley. 1984.
Uses puzzles or tricks with common household items to engage students in performing easy experiments which represent fundamental principles explained in this book. Best for ages 9-12.

Recio, Belinda of The Boston Museum of Science. *Boston's Museum of Science Inventor's Workshop*. Running Press. 1994.
Consists of a colorful illustrated box that includes The Inventor's Handbook, The Electric Motor, The Inventor's Workshop and much more.

Rheingold, Howard (ed.) *The Millennium Whole Earth Catalog: Access to Tools for the Twenty-First Century*. Harper Collins. 1994.
Contains useful and interesting resources, providing food for thought and suggested resources for inventors/innovators.

Sherkerjian, Denise. *Uncommon Genius: How Great Ideas Are Born*. New York: Penguin. 1990.
Interviews the winners of the MacArthur Foundation Fellowships—the "genius awards"—to discover how they think of great ideas.

Sobol, Donald J. *Encyclopedia Brown and the case of ...* New York: Delacorte Press. 1996.
A series of detective stories for kids.

Steinberg, Neil. *Complete & Utter Failure: A Celebration of Also-Runs, Runner-Ups, Never-Weres & Total Flops*. New York: Doubleday. 1994.
Enables readers to have a sense of humor about failed inventions.

Strongin, Herb. *Science on a Shoestring*. Menlo Park, CA: Addison-Wesley. 1985, 1976.
Designed for K through 7th grade school teachers with little or no science background, this book contains 56 different low-cost, scientific "investigations" which use few supplies and materials.

The Thomas Alva Edison Foundation. *Thomas Edison Book of Easy and Incredible Experiments: Activities, Projects and Science Fun for All Ages*. New York: John Wiley & Sons. 1988.
Compiles the best, most popular experiments and projects sponsored by the Edison Foundation and a range of activities from the very simple to the intriguingly complex.

Vare, Ethlie Ann and Greg Ptacek. *Mothers of Invention—From the Bra to the Bomb: Forgotten Women and Their Unforgettable Ideas*. New York: William Morrow & Co. 1987.
Contains the life stories of more than 80 women inventors and innovators.

Von Oech, Roger. *A Kick in the Seat of the Pants: Using Your Explorer, Artist, Judge & Warrior to be More Creative*. New York: Harper & Row. 1986.
Describes the four main steps in the creative process using the analogies of an explorer, artist, judge and warrior.

Von Oech, Roger. *A Whack on the Side of the Head: How You Can Be More Creative*. New York: Warner Books. 1990, 1983.
Filled with provocative puzzles, anecdotes, exercises, metaphors, cartoons, questions, quotations and stories that strive to unlock the mind for creative thinking.

Waitley, Dennis. *Winning the Innovation Game*. Berkeley, CA: Berkeley Publishing. 1986.
Based on interviews with successful innovators in the United States.

Williams, Trevor I. *The History of Invention: From Stone Axes to Silicon Chips*. New York: Facts on File. 1987.
Describes thousands of inventions from around the world and puts them in their historical, cultural and scientific context.

Wilkes, Angela. *My First Science Book: A Life-Size Guide to Simple Experiments*. New York: Alfred A. Knopf. 1990.
Enables children to have fun and learn about science using this very colorful and over-size book of activities which uses commonly found materials.

Witt, Scott. *How to Be Twice as Smart: Boosting Your Brainpower And Unleashing the Miracles of Your Mind*. West Nyak, NY: Parker Publishing Company, Inc. 1983.
Describes how to generate creative ideas and solve problems.

COMPETITIONS & CAMPS

Camp Invention
http://www.invent.org/camp.html
1-800-968-4332

Encourages the development of a child's imagination through one-week, summer day-camp held in schools throughout the country.

Central Savannah River Area Science and Engineering Fair, Inc.
PO Box 507
Augusta, GA 30903-0507

"Aids schools, teachers and students in developing an interest in all aspects of science and engineering through the science fair project."

Invent America!
PO Box 26065
Alexandria, VA 22313
703-684-1836

Hosts a national nonprofit education program and student invention competition.

The Lemelson-MIT Awards Program's Invention Dimension
http://web.mit.edu/invent/

The National Awards consist of the world's largest single prize for invention and innovation, the annual half-million dollar Lemelson-MIT Prize, as well as the annual Lemelson-MIT Lifetime Achievement Award.

Rube Goldberg Machine Contest
212-371-3761 (fax)

See the entry under INTERNET SITES for The Official Rube Goldberg Web Site.

The GREAT! Canadian Science Contest
c/o The Royal Society of Canada
225 Metcalfe St., Suite 308
Ottawa, Ont. K2P 1P9
http://www.rsc.ca/science.contest

Provides excellent links to science project ideas, science project resources, other science fairs, etc.

INTERNET SITES

21st Century Problem Solving
http://www2.hawaii.edu/suremath/home.html
Provides resources for teachers, students, parents, administrators, etc., in the field of problem solving.

4000 Years of Women in Science
http://crux.astr.ua.edu/4000WS/4000WS.html
Contains biographies, photographs and references for women in the sciences (including women inventors).

ABC News Sci/Tech
http://www.abcnews.com/sections/scitech/
Contains news stories on science and technology topics.

Bill Nye The Science Guy
http://www.disney.com/DisneyTelevision/BillNye/index.html
Presented by Disney, this Web Site demonstrates scientific principles in a fun way, including "Demo of the Day."

Jerome and Dorothy Lemelson Center for the Study of Invention and Innovation
http://www.si.edu/lemelson/Start.htm
Contains information on the history of invention and inventors as well as extensive links.

CNN Sci-Tech News
http://www.cnn.com/TECH/
Provides news stories on science and technology updated daily.

Creativity Web: Resources for Creativity & Innovation
http://www.ozemail.com.au/~caveman/Creative/
Includes information on creativity basics, a mental workout center, Children's Corner, Resources, Quotations, etc. The Children's Corner in particular can be an excellent source of inspiration.

DaVinci's Inventor Homepage
http://sulcus.berkeley.edu/Invention
Claims to be the master list of Internet resources of use & interest to inventors and entrepreneurs, including links to invention articles, contests, organizations, general resources, patents, legal resources, etc.

Derwent Patent News
http://www.derwent.com/news/patnews.html
Delivers in-depth, up-to-date patent news.

e.(mc)^2
http://www.emc.mc/science-tech/index.html
Contains information about invention shows and competitions occurring in Europe, such as The European Inventions Competition of Monaco on the Science-Tech page.

Franklin Pierce Law Center
http://www.fplc.edu/tfield/idea.htm
Discusses patents, searches, profits, etc., for inventions.

Inventor World
http://www.InventorWorld.com
Presents information about marketing and a link to the United States Constitution, Article 1, Section 8 guaranteeing inventor's rights.

Inventor's Digest Online
http://www.inventorsdigest.com/default.html
Comprised of a bi-monthly inventor's magazine.

Inventor's Homepage
http://ourworld.compuserve.com/homepages/invent/
Dedicated to inventors world wide which will give inventors a place to market their inventions, products and ideas, while also giving consumers a place to shop for new inventions and ideas.

Inventors
http://inventors.tqn.com/
Contains inventor bulletin boards, chat, event, newsletter, links, inventor biographies, etc. (new links on women inventors are particularly interesting). Articles cover a variety of modern inventor-related issues (e.g., the controversy over bio patents, the inventors of neon lights, etc.).

Invent Net—The Inventors Network
http://www.inventnet.com/info.html
"Provides independent inventors with the newest information and helps them develop and market their inventions."

Kids Views Home Page
http://kafka.uvic.ca/~monterey/KidsViews.html
Enables kids to participate in the debates, creating the perfect school, Invention Convention, Mystery Impossible, etc.

Learn About What It Takes to Be An Inventor
http://mustang.coled.umn.edu/inventing/inventing.html
Includes links to invention-related sites and information about becoming an inventor (geared toward young adults).

Lemelson National Program - National Collegiate Inventors and Innovators Alliance
http://hampshire.edu/nciia/

Provides sources for grants, networking, patent advice and conference information.

Mad Scientist Network
http://madsci.org/

Includes a "collective crania of scientists answering questions in many areas." Be sure to follow their guidelines in asking questions.

Science Learning Network
http://www.sln.org/

Contains an "on-line community of educators, students, schools, science museums and other institutions demonstrating a new model for inquiry science education."

Shadow Patent Office
http://www.edsr.eds.com/spo/open/home.html

Claims to be "the only WWW site offering a searchable database consisting the full text of the U.S. Patent & Trademark Office (USPTO) patents issued from January 1, 1972 to the present." Since this service charges a fee, you may want to check out the IBM site at http://www.ibm.com/patents instead.

Student Competitions, Tournaments and Opportunities
http://dent.edmonds.Wednet.edu/EEN/Competitions.html

Has links to all types of student competitions at various levels.

The Gadget Inventor's Website
http://www.brandywine.net/users/hanisco/gadget.htm

Provides advice and information for inventors, including avoiding scams, etc.

The Innovators' Book Source Catalog
http://www.webcom.com/aspen/ibc/index.html

Sells books about inventors, creativity, etc.

The Inventor's Mill-Shop
http://wtbradley.com/

Contains patent information, advice, products, etc., related to the invention process.

The Official Rube Goldberg Web Site
http://www.rube-goldberg.com/rg2idx.htm

Describes and displays the work of Rube Goldberg, a Pulitzer Prize winning cartoonist, sculptor and author best known for wacky inventions.

Tomorrow's World: The World's Favourite TV Science Show
http://www.bbc.co.uk/tw/index.html

Contains information from the most current week of the BBC science show Tomorrow's

World.

Young Inventors Network
http://www.wirehub.nl/~invent/newyin.htm
Supports young inventors by providing information on developing and marketing inventions and providing contacts from around the world.

MAGAZINES & NEWSLETTERS

Communiqué
The Creative Problem Solving Group - Buffalo
1325 North Forest Road, Suite F-340
Williamsville, NY 14221
716-689-2176
Published occasionally "to highlight and share information about current development, research and program activities taking place at CPS-B."

Discover Magazine
available in the library and on newsstands
http://magazines.enews.com/magazines/discover/
Contains informative articles and a School Science Program.

Inventors World Magazine
c/o The IPDC
72a Bedford Place
Southampton, SO15 2DS
United Kingdom
(UK) 01703 570101
(UK) 01703 570102
http://easyweb.easynet.co.uk/~robodyne/inventors-world/
Published quarterly. Geared specifically toward inventors with previous articles covering topics such as the inventor's world 100 years ago, intellectual property law, new products, etc.

"The Undiscovered World of Thomas Edison." (Volume 276 Number 6, December 1995). *The Atlantic Monthly*, pp. 80-93.

THINK™: The Magazine on Critical & Creative Thinking
ECS Learning Systems, Inc.
2340 W.R. Larson Rd., San Antonio, TX 78261
210-438-4262

Working Knowledge series. *Scientific American.*

Yes Magazine: Canada's Science Magazine for Kids
http://www1.islandnet.com/~yesmag/

Contains science projects that kids can do at home, a brain bumpers section, information on how things work, etc.

MUSEUMS, ORGANIZATIONS & AGENCIES

Alliance for American Innovation
1100 Connecticut Avenue, NW
Washington, DC 20036-4101
202-293-5351
http://www.Alliance-DC.org/
Contains legislative information, inventor resources, etc.

Carnegie Science Center
One Allegheny Avenue
Pittsburgh, PA 15212-5850
412-237-3400
http://www.csc.clpgh.org/
Strives to educate, entertain, excite and inspire "the widest possible audience through programs in science and technology."

Center for Creative Learning, Inc.
4152 Independence Court, Suite C-7
Sarasota, FL 34234-2147
941-351-8862
Sells textbooks and other resources that may be useful for teachers. Also publishes a newsletter.

Houston Inventors Association
2916 West T.C. Jester Blvd., Suite 105
Houston, TX 77018-7051
713-686-7676

Inventions & Innovation Program
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585
202-586-3897
http://www.oit.doe.gov/Access/inventions/inventions.html
Provides funding and commercialization training to develop energy-saving inventions.

Houston Museum of Natural Science
One Hermann Circle Drive
Houston, TX 77030
713-639-4600

http://www.hmns.mus.tx.us/

Contains a planetarium, butterfly center, IMAX Theatre and a natural science museum that includes Discovery Place—a permanent exhibit with hands-on activities enabling visitors to conduct experiments.

Lawrence Hall of Science
University of California, Berkeley
Lawrence Hall of Science #5200
Berkeley, CA 94720-5200
510-642-5132
http://www.lns.berkeley.edu/lhshome.html

Enables visitors to practice being scientists in this public science museum.

Miami Museum of Science
3280 South Miami Avenue
Miami, FL 33129
305-854-4247
http://www.miamisci.org/

Provides a science education in a stimulating, enjoyable, non-threatening environment.

Museum of Science
Science Park
Boston, MA 02114-1099
617-723-2500
http://www.mos.org/

Strives to make science fun and accessible to all through the use of more than 400 interactive exhibits and an Omni Theater.

National Inventors Hall of Fame, Inventure Place
80 West Bowery, Suite 201
Akron, OH 44308
216-762-4463
http://www.invent.org/inventure.html

Enables visitors to explore their curiosity and creativity. Web site includes an index of inventions.

New York Hall of Science
47-01 111th Street
Flushing Meadows, Corona Park, NY 11368
718-699-0005
http://www.nyhallsci.org/

Presents more than 185 interactive exhibits that provide fun, learning experiences for everyone.

Ontario Science Center
770 Don Mills Road
Toronto, Ontario
M3C 1T3
CANADA
416-429-4100

Explores the earth, a molecule, landing on the moon, bees making honey and much more through hundreds of science-related exhibits.

Oregon Museum of Science & Industry
1945 SE Water Avenue
Portland, OR 97214
503-797-4000
http://www.omsi.edu/

Contains hands-on science exhibits, an Omnimax Theater, laboratories and more.

Science Museum of Minnesota
30 E. Tenth St.
St Paul, MN 55101
612-221-9488
http://www.sci.mus.mn.us/

Contains hands-on science exhibits, an Omni Theater, etc.

The Exploratorium
3601 Lyon St.
San Francisco, CA 94213
415-563-7337
http:/www.exploratorium.edu

Consists of a collage of 650 interactive, science, art, and human perception exhibits.

The Franklin Institute Science Museum
222 North 20th St.
Philadelphia, PA 19103
215-448-1200
http://sln.fi.edu/tfi/

Stimulates interest in the sciences.

The Tech Museum of Innovation
145 West San Carlos St.
San Jose, CA 95113
408-279-7150
http://sizzle.thetech.org

Contains hands-on laboratories and workshops in science and technology for students in Grades K through 12, teachers and the general public, plus innovative community programs such as Tech Girls.

VIDEOS, CD-ROMS, AUDIOTAPES & CARDS

Assignment Discovery: Science & Technology on Discovery Channel. (VIDEO)
1-800-342-8100
http://school.discovery.com/vvault/assign/spring96/scitech/inventionep51ep53/index.html
Presents a video magazine on innovation (hang gliding, running shoes and fireworks).

Clarie II, Thomas C. (ed.). *Inventors Card Game.* U.S. Games Systems. 1989. (Card Pack)
Pictures fourteen historically famous inventors, their work and informative text about the inventor or invention.

Von Oech, Roger. *Creative Wack Pack.* U.S. Game Systems. 1988. (CARD PACK)
Consists of 64 cards that teach a creativity technique or strategy and which can be used by one person or a group of people.

Discovery Channel's *Invention* episodes 1 through 3. (VIDEO)
1-800-342-8100
Describes the development of specific inventions.

Leonardo: The Inventor. InterActive Electronic Publishing. 1994. (CD Rom)
Contains an interactive format with information about Leonardo da Vinci, his inventions, works of art, etc.

Macaulay, David. *The Way Things Work.* DK Multimedia. (CD Rom)
Based on David Macaulay's 1988 book, *The Way Things Work*, this CD Rom vividly demonstrates how everyday items operate.

Wujec, Tom. *Pumping Ions: Games And Exercises To Flex Your Mind.* Bantam. 1989. (AUDIO)

Evaluation Form

We hope *Young Inventors: A Kit for Competition Organizers* helped in preparing you for a competition. Please fill out the form below and let us know how we can improve on future editions. Please rate each criteria from 1 (poor) to 5 (excellent). Thank you.

	(poor)				(excellent)
Organizing Competitions Section					
Clarity	1	2	3	4	5
Usefulness	1	2	3	4	5
Thoroughness	1	2	3	4	5
Sparking Imagination Section					
Clarity	1	2	3	4	5
Usefulness	1	2	3	4	5
Thoroughness	1	2	3	4	5
Activities & More Activities Section					
Clarity	1	2	3	4	5
Usefulness	1	2	3	4	5
Thoroughness	1	2	3	4	5
Inventing 101—Handouts for Participants					
Clarity	1	2	3	4	5
Usefulness	1	2	3	4	5
Thoroughness	1	2	3	4	5
Samples	1	2	3	4	5
Checklists	1	2	3	4	5
Resources	1	2	3	4	5
Overall	1	2	3	4	5

Comments (attach more pages if needed):_____

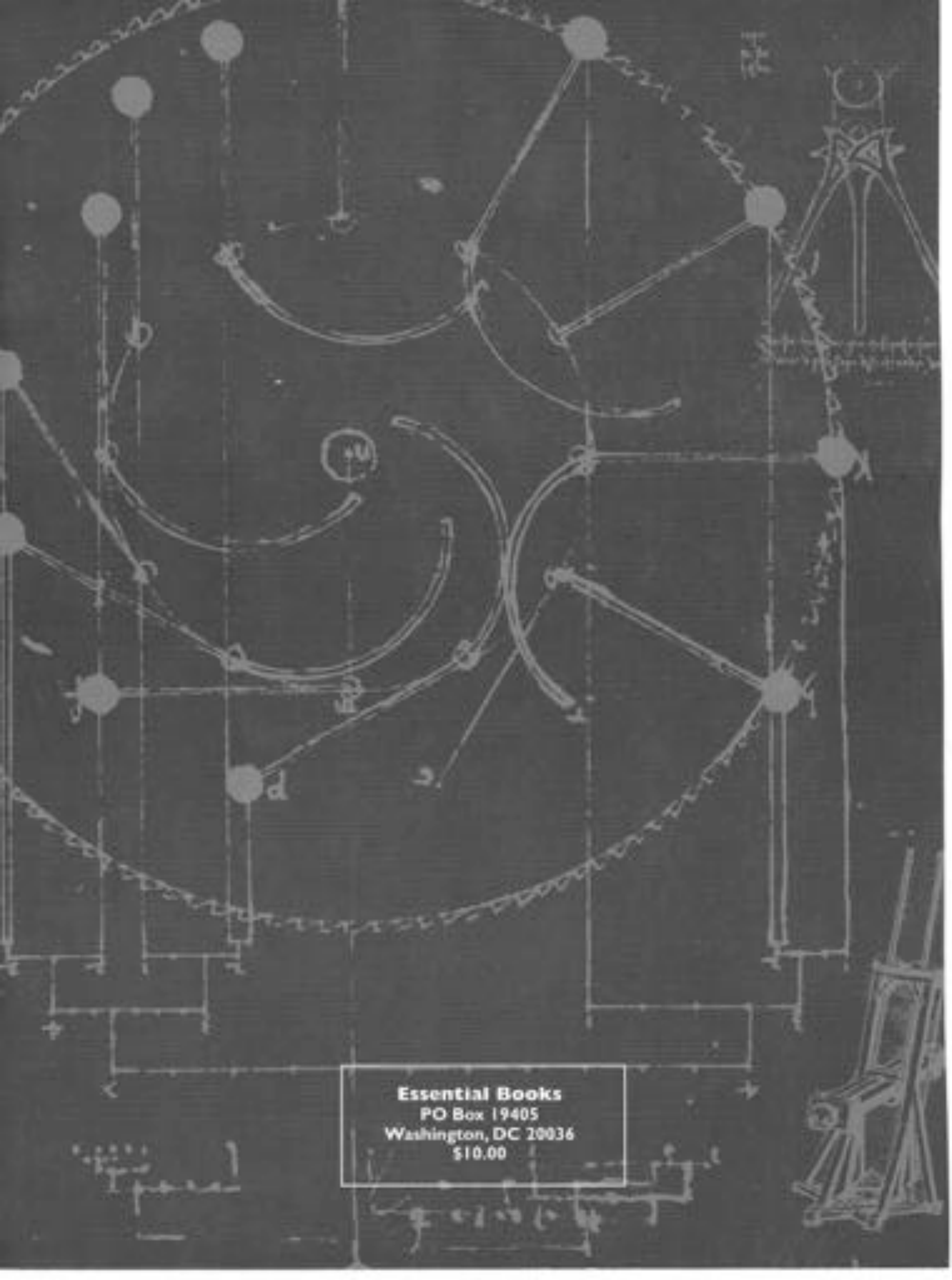
_____

_____

_____

Mail to:
Inventors of the Future Project
Institute for Civic Renewal
P.O. Box 19405
Washington, D.C. 20036

Notes



Essential Books
PO Box 19405
Washington, DC 20036
$10.00