

NORTHEAST SERVICE COOPERATIVE

MINNESOTA STUDENT INVENTORS CONGRESS



ADVISOR / PARENT HANDBOOK

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NORTHEAST SERVICE COOPERATIVE

MINNESOTA STUDENT INVENTORS CONGRESS

REGIONAL COMPETITION

TO: LOCAL MSIC COORDINATORS

FROM: KIJO PULFORD

Welcome to the MSIC (Minnesota Student Inventors Congress) – a unique project challenging the problem-solving and higher level thinking skills of your students.

The Regional Competition is set for Friday, February 5, 2014 at the Miller Hill Mall, Duluth. Grades 4-12 students are eligible to participate. A local “Inventorama” is an option but not required to send students to the regional. It is hoped that both you and your students have an enjoyable and educational experience.

Students from our area attending the State Event at Redwood Falls will display their projects at the non-competitive event in June 2014, as part of MSIC’s three-day State event.

This packet of materials will provide you with information and guidelines. Should you have questions, please feel free to call me at 218-741-0750 ext 2111 or email me at kpulford@nesc.k12.mn.us

Please return the following items by:

November 18, 2011

1. School Registration Form

January 12, 2012

1. Student Information Form (includes the T-Shirt order)

January 18, 2012

1. All Payments (Make check payable to: Northeast Service Cooperative)
2. Region Event Deposit Form & Deposit
3. District Participation Data Sheet
4. Certificate of Insurance

JUDGES WANTED: If you know of adults (college students are eligible) who may be well-qualified to serve as judges and who would be willing to assist, have them fill out the form (available online). Parents and teachers are more than welcome to be judges.

GOOD LUCK TO ALL MSIC REGIONAL PARTICIPATING SCHOOLS!

MINNESOTA STUDENT INVENTORS CONGRESS
REGIONAL EVENT
FRIDAY, FEBRUARY ' , 201&
MILLER HILL MALL – DULUTH, MINNESOTA

INFORMATION

1. **DUE BY JANUARY 12, 2012:** Student Information Form (includes T-Shirt order)
2. **DUE BY JANUARY 18, 2012:** All Payments and Deposit
District Participation Data Sheet
Certificate of Insurance

PLEASE SEND THE ABOVE ITEMS TO: Kijo Pulford
Northeast Service Cooperative
5525 Emerald Avenue
Mt. Iron, Minnesota 55768

3. **GRADE LEVEL PARTICIPATION:** Students in grades 4-12 are invited to participate
4. **SCHEDULE – FEBRUARY 3, 2012:**

8:30 – 9:15	Registration / Project Set-up
9:15 – 11:00	Project Judging
11:00-12:00	Kids' Choice Judging
11:30 -1:00	Lunch
1:00 - 1:30	Awards Ceremony
1:30 – 2:00	Dismantling of Projects, Pack-up and Clean-up
5. **TABLES:** Are provided – please clean-up, dismantle and return after the event
6. **SNACKS:** Students may bring a sack lunch. The Food Court in the Mall is open, and students accompanied by an adult may eat there
7. **UNLOADING/PARKING:** Projects will be unloaded at a Mall entry that will be announced. Packets for the day will be given to advisors as they enter. Parking is in the Mall parking areas.
8. **PROPER DISPLAY:** For a student to receive a certificate and be eligible for State, the invention must be displayed and described to the judges.

KIDS RECOGNIZE KIDS

The “Kids’ Choice Award” has become an exciting part of the Regional event. This award will be presented to the projects chosen by their peers to be the best. Participants will be invited to take a ballot with them as they view other projects on display the day of the event. Results will be tallied and the winners announced at the awards ceremony.

MSIC GUIDELINES

1. **REGIONAL EVENT RECOGNITION:**

GRADE CATEGORIES: 4-6 and 7-12

PROJECT CATEGORIES: See explanation on the following page

STATE PARTICIPANTS: 25 projects displayed will be selected from the “Category Finalists” to be displayed at the State Event in Redwood Falls in June 2012 at the **56th Annual Minnesota Inventors Congress**. Student Inventors are requested to accompany their projects – parents are highly encouraged to attend. This is a **non-competitive** event allowing students to interact with their peer inventors, adult inventors and hundreds of visitors.

2. **LIABILITY:** Liability cuts across all grade / age levels and is a concern. The MSIC State Council expects parental accompaniment and involvement at the Regional and State Events (or that parents make such arrangements). MSIC and the Northeast Service Cooperative are not responsible for damage to projects or injury or loss. Participation at the Miller Hill Mall is dependent on each school submitting a **Certificate of Insurance** with additional insured specified.
3. **INVENTOR’S LOG:** REQUIRED as part of the judging process and necessary for the protection of the student’s invention - the Inventor’s Log must be displayed with the invention.
4. **PARTICIPANT ABSENTEEISM:** If an invention is displayed at the Regional and State Events with absentee representation (teacher, peer, parent, etc) and participation fees are paid, the student(s) shall receive all the benefits of participation.
5. **TEAMING:** Allowed – maximum of two (2) students per invention.
6. **USE OF ELECTRICITY:** The use of AC or DC electricity is very limited and not recommended. Advisor’s must inform the Regional Coordinator by January 19 of the need, and student(s) shall provide the necessary extension cord. AC power may not be available at the State Event.
7. **BACKBOARDS:** Recommended size: 18” x 24”
Each backboard, at a minimum, should contain the following information:
1) Name of invention 2) Student’s name 3) School 4) Grade 5) Category
8. **PROTOCOL:** As a matter of courtesy and protocol, a student inventor is asked to stand when his/her invention is being judged.
9. **NO LIVE ANIMALS:** If an invention involves live animals (ie: animal cage), an appropriate model of the animal must be used. No nudity or pyrotechnics will be allowed.

EXTRA SPACE REQUIRED: Indicate need for more than usual space by January 18. Keep in mind the space allocation given is typical at the State Event.

MILLER HILL MALL COMMON AREA REGULATIONS

1. Common Area Applications must be received at least 30 days prior to the event. NESC will complete this form for the entire event.
2. Our hold harmless form must be signed by either the sponsoring or participating organization.
3. Each group, or the sponsor, must provide a Certificate of Insurance with a \$2 million liability with the following parties as additional insureds:

Simon Property Group, LP
M.S. Management Associates, Inc.
Simon Property Group, Inc.

These names must be listed on each Certificate of Insurance as additional insureds.

4. Hand written signage is forbidden. All signs must be approved by mall management in advance. They cannot be taped or fixed to any columns, walls, signcard holders or any other structure.
5. All tables must be skirted professionally in flame retardant materials approved by the mall and fire marshall in advance. If the mall is asked to supply a skirted table, the charge is \$20 more per table.
6. Electrical access must be requested in advance and is not recommended. Additional materials for exhibitors must be approved in advance by the mall Marketing Director. No cords may be run on the floor unless permission is given by the Marketing Director or Mall Manager, and cords must be taped down or covered.
7. Placement of all display is at discretion of mall. No location is guaranteed. Placement may be moved at any time during your visit. You may not move your location without approval from the Regional Coordinator, Mall Marketing Director and/or Mall Manager.
8. The exhibitor must comply with all mall management suggestions for changes or alterations in displays.
9. Booths must be manned during all mall hours. No smoking, eating or drinking is allowed at booths.
10. Unless otherwise arranged, set-up and take-down is limited to before and after mall hours. Early take-down shall be considered a violation of our agreement and will endanger future use of the mall.
11. Selling of items is not allowed unless there is an agreement to all items in advance. Under no circumstances is food to be sold, or any items in conflict with mall stores.
12. Parking lot promotions are discouraged. Handbills on cars are forbidden.
13. Literature can only be distributed within the confines of your space. All literature should be professional in nature and not objectionable to any segment of society.

NORTHEAST REGION MSIC CATEGORIES

THE FOLLOWING CATEGORIES HAVE BEEN DESIGNATED FOR THE REGIONAL COMPETITION

1. CLOTHING / HEALTH & BEAUTY AIDS (orange)
2. FOODS (white)
3. GAMES AND TOYS (purple)
4. HANDICAPPED AIDS (red)
5. HOMEWORK HELPERS (green)
6. KITCHEN AIDS / HOUSEHOLD HELPERS (pink)
7. OUTDOOR RECREATION / SPORTS (lavendar)
8. PETS (blue)
9. SAFETY (yellow)
10. TECHNOLOGY (silver)
11. MISCELLANEOUS (black)

Please register your students' inventions with a category number on the MSIC Student Registration Form under the Category Number column.

APPLY MSIC TO THE MN GRADUATION STANDARDS!

The Minnesota Student Inventors Congress process fits readily into several areas of the MN Graduation Standards. The features of the program include, among others:

- ❖ Idea generation
- ❖ Research into previous related inventions
- ❖ Development of the solution to the problem
- ❖ Testing of models, materials and effectiveness
- ❖ Log keeping to record solution attempts
- ❖ Preparation of display to demonstrate process
- ❖ Practice for and participation in the judges' interview
- ❖ Potential for market assessment and interest survey
- ❖ Potential to develop a marketing plan

These features can meet many of the elements of the Standards. Specific fits a school could include:

- PRIMARY LEVEL:**
Writing and Speaking 3.1; Data Categorization, Classification and Recording 3.1; Shape, Space and Measurement 3.2
- INTERMEDIATE LEVEL:**
Writing and Speaking 1.1, 1.2; Inquiry-Media, Observation and Investigation 1.1; Mathematics-Chance and Data Handling 1.3; Managing Resources-Technology Skills 1.1
- MIDDLE LEVEL:**
Writing and Speaking M.1, M.2; Mathematics-Chance and Data Handling M.3; Inquiry-M.1, M.2, M.3; Science (per individual project), Managing Resources M.4
- HIGH SCHOOL LEVEL:**
Write and Speak-Technical Writing, Public Speaking; Math Applications-Chance and Data Handling, Technical Applications; Inquiry-Research Process, Research and Create a Business Plan, Market Research, New Product Development; Science (individual projects)

These are suggestions when looking for links between MSIC and the Graduation Standards. A project focus area for an individual student may match elements not suggested here. We are very interested in any work schools may do for the Graduation Standards.

CURRICULUM

The MSIC Handbook is designed to assist the teacher in presenting an Inventing Unit. Inventing workshops can also assist in developing a custom curriculum for the school or grade level.

An excellent resource can also be found in the **Inventive Thinking Curriculum Project: An Outreach Program of the United States Patent and Trademark Office. Project XL.**

The materials are provided free by the Patent and Trademark Office, and contain reference information on patents, trademarks and copyrights, as well as suggested activities to generate ideas, evaluate solutions and encourage creativity.

These materials can be obtained by writing:

Project XL
U.S. Patent and Trademark Office
Office of Public Affairs
Washington, D.C. 20231
(703) 305-8341

MSIC is also assisting in developing curriculum, including for the High School level. Information will be made available for advisors as the curriculae are finished.

The Bibliography in the Handbook offers many resources for developing an Invention Unit.

THE INVENTION LOG

The Invention Log is a very important component of the Invention Process because it shows the inventor's thought process as well as the activities that went into the creation of the invention.

The log must be handwritten by the inventor. Only one log is required for a team, but all team members should be included in the log, explaining how each takes part in the development of the invention. Kindergarten and first grade students may dictate their thoughts and have an adult write it, if necessary.

The log should have the following parts:

- Cover Page with name or names of the Inventors
- Summary Form – place in front of log so that it is the first page the judges will read
- Activity by Activity description of the invention process
- An entry that shows that the Inventor checked to see if this invention is original
- Solution Alternatives – all the things you tried, even if they didn't work. Include ones you just thought about even if you didn't try them out
- A part that shows how you tested your invention – include who tried it out, how it worked, problems that occurred and the actual words that people said
- Include any help your parents, grandparents, neighbors, teachers or other people gave you
- Develop a Survey and write the questions you will ask and whom you will ask, for example, "I will go to the mall and ask 10 mothers with babies whether they would buy my invention and how much they would be willing to pay for it"
- Develop a graph to show the results of your survey
- Continue your log to show how you changed things or added things, based upon the feedback you got from other people
- At the end of the log, include a page called EXPENSES on which you put all the money you spent

Each entry should be on a separate page. A log entry may be only three or four sentences or it may be a whole page. **BE SURE TO PUT THE DATE ON ALL ENTRIES.** Have someone check your log every once in awhile.

Draw diagrams or pictures of your invention as you think about what it will look like. Label all the parts of your diagrams. If the invention changes, draw another diagram showing your changes.

Be sure to give credit to anyone who helps you or any book you read or anyone you call on the phone or write to.

OVERVIEW FOR PARENTS

*“If a child is to keep alive his/her inborn sense of wonder...,
s/he needs the companionship of at least one adult who can share it,
rediscovering with him/her the joy, excitement and mystery
of the world we live in.”*

Rachel Carson

Student Inventors can be the best young people to be around. Your child can also be very challenging, as his/her creativity seeks an outlet. S/He has boundless energy and ideas, and can have five million “projects” going, and very few completed. Perhaps your child is even frustrated with school, where his/her ideas may not be appreciated.

The Minnesota Student Inventors Congress was developed to answer some of these needs. Twenty years ago, the Minnesota Inventors Congress and Inventors Resource Center (the oldest annual inventors convention in the world) joined with the Minnesota Service Cooperatives/South Central Service Cooperative to create a program which would encourage creative and inventive thinking in Minnesota’s young people.

The result has been over 8,000 students statewide per year who have been introduced to invention. A good number of those come back more than once to share their new ideas for solving everyday problems. From the local to the Regional to the State level, student inventors are sharing their innovative ideas with the public. Some go on to market or patent their ideas. All benefit from the discipline they learn as they participate.

The inventing process stimulates:

- ◆ Idea identification
- ◆ Research into other inventions
- ◆ Development of the solution to the problem
- ◆ Testing of models, materials and effectiveness
- ◆ Log keeping to record solution attempts
- ◆ Preparation of display to demonstrate process
- ◆ Practice for and participation in the judges’ interview
- ◆ Opportunities for building self-esteem
- ◆ Encouragement for completing ideas and creativity
- ◆ Positive recognition for abilities

This packet provides you with the information your child has, or may need, to participate, as well as support information you will need in order to assist.

Most important for you is the advice to stand back and enjoy!

Built into the program is the need for your child to get the idea, do the research, make the solution attempts, and keep a log of him/herself. The judges will be asking questions to this effect. It will be very hard to “keep hands off”, but for his/her success, your child must be the inventor. Of course, there will be instances when adult assistance is mandatory (as with the use of power tools, etc.) to ensure safety. The best method to encourage your child to go on his/her own may be to answer questions with questions:

“Do you think this will work?” “Have you tried it?”

or

“How should you do this?” “What have you tried so far?”

Suggest that your child ask other adults about their ideas: farmers, custodians, mechanics, and professionals in the area they are exploring. This process not only gives children confidence, it eases them into the interview portion of the event.

Above all, praise and encourage your son or daughter for taking the risk of inventing. Remind them that Thomas Edison tried 2,000+ materials for the filament of the lightbulb before he hit on the right one.

Good ideas and good invention stake time, trial and self-confidence to accomplish. As parents, you can play an immense role in your child’s success just by showing interest!



CHARACTERISTICS OF INVENTIVE PEOPLE

This list of characteristics is gleaned from the literature on creativity and writings on the lives of inventors. It is not all-inclusive and is intended as a starting point for focusing on characteristics important for invention. By understanding the inventive perspective, teachers and parents are better able to encourage inventive behavior.

- 1) **Inventors are playful.** History documents that creative people have conceptualized some of their best ideas from playing around. Galileo invented the telescope as a toy for himself. It was not until he used it for awhile that he recognized how important it really was. Einstein's "thought experiments" can easily be seen as imagination games.

*"A person might be able to play without being creative, but
s/he sure can't be creative without playing." Kurt Hanks and Jay Parry*

- 2) **Creative individuals hold a fundamental belief that nothing is impossible.** This quality is sometimes described as an open mind. It is a basic attitude they maintain toward life.
- 3) **Innovators are imaginative.** They are not afraid of the unique or unusual; in fact, they thrive on it!
- 4) **They are flexible in their thinking.** They are able to see many different sides of a situation, device, procedure or operation. This flexibility allows them to play with ideas in their mind.
- 5) **Inventive people are curious.** They enjoy learning and knowing about things from a variety of resources. They like to tinker, read and observe.
- 6) **They believe there is always a better way.**
- 7) **They have insight into or foresight related to consequences.** They are able to see how some things might affect others and to predict outcomes accurately.
- 8) **Creative individuals are not discouraged easily by problems encountered.** Problems become challenges to overcome.
- 9) **They are persistent.** Hard work (on something that interests them) does not scare them away. Inventive work is frequently undertaken with little regard for time.
- 10) **Inventors have a desire to do things or make things better.**

*"Discovery consists of looking at the same thing as everyone else and thinking something different."
Albert Szent-Gyorgyi - Nobel Prize winning physician*

EVIDENCE OF INVENTIVE CHARACTERISTICS IN CHILDREN

These characteristics or qualities of inventors evidence themselves in somewhat different ways in students in school. Examination of these student behaviors assist teachers and parents to see the positive in what might otherwise be considered negative behavior. It also gives clues for how to proceed constructively in channeling these behaviors.

- 1) **Those who continually tinker** with equipment, materials, tools or ideas are practicing the ability to see things from many perspectives. Within their tinkering, they may discover multiple uses for objects, modifications and alternative ways to make something work. These students may need specific parameters regarding time for tinkering and objects with which they may tinker, but they definitely need to tinker and experiment. This is their primary learning mode and to deprive them of the opportunity is to frustrate and minimize their learning.
- 2) **Daydreamers** many times are playing with new ideas and possibilities in their minds. These may or may not relate to the school task at hand. When daydreams do not concern the task at hand, it can be frustrating for student and teacher. As a compromise, encourage daydreamers to keep an idea notebook handy and use it to capture an idea when daydreaming conflicts with school tasks. Equally important is for the teacher to provide legitimate daydreaming time.
- 3) **Doodling** is another way of exploring things from a variety of perspectives. These, too, can be kept in an idea book for future reference. Although doodlers usually don't conflict as often with school tasks as daydreamers and tinkerers, they also may need guidelines regarding time for doodling.
- 4) **The divergent tendency** of budding inventors may express itself in contrary perspectives or alternative solutions. If they disagree with the majority of students about an issue, they may or may not hesitate to express their opinion. When the teacher describes the plans for a project, day or activity, they often will propose a better way. Although this behavior can be trying, to say the least, finding opportunities to give them planning experience or the possibility for input will give them a constructive challenge for using their divergent ability.
- 5) Matched closely with the previous behavior is a **disregard for peer acceptance or agreement**. They truly do march to a different drummer and do not seem to mind the lack of company. They prefer independent or individual projects and work opportunities. This choice may contribute to an aloneness which may be difficult. Their need to work alone is high and should be honored whenever possible, especially in creative endeavors.
- 6) **The pursuit of independent projects** logically follows the previous behavior. However, these independent projects may not be part of the school experience for some. This characteristic may be evidenced in after-school pursuits: building model rockets, designing computer programs, collections, etc. The creative and most nurturing teacher for a budding inventor will find ways to incorporate basic skills learning into these types of projects and activities, so that students see the relationship between school learning and out-of-school learning.

Taken from What If? – Metro Young Inventors Fair

"It is not important what you cover in school...it is important what you uncover."

Anonymous

"Personally, I am always ready to learn, although I do not always like to be taught."

Winston Churchill

WHY TEACH INVENTING?

Inventing is a concrete, highly motivating way to teach children a variety of important thinking and learning skills. It involves skills in oral and written communication, forecasting, planning, experimentation, research, visualization, inquiry and decision making. While there is a tendency to think of inventing as solely a creative process, it also must involve critical thinking. Inventing calls for analysis of existing conditions, problem identification, problem anticipation, development of thoughtful, appropriate criteria and evaluation based on those criteria.

Educators recognize the importance of teaching relevant material to their students. The inventing process is an exemplary way to do so. It involves children in learning to think in ways that will be useful to them throughout their lives.

Students are not given prefabricated problems to solve, but rather are called upon to recognize and identify real problems around them. They are not given neat and tidy workbook problems on which to practice, but are called upon to tackle the ill-defined, loosely structured problems of real life. Inventing challenges students to research and study problems within the actual situation in which they exist.

They are confronted with the fact that perfect solutions may not exist, but that they are capable of coming up with quite good ones. And, the children learn how to go about finding those solutions. They learn a process that can be used over and over again in many ways and situations.

Internalizing the skills used in the inventing process gives students access to those skills throughout their lives.

A DOZEN WAYS TO THINK LIKE AN INVENTOR

INVENTORS:

1. Try to find ways to improve and refine things, try to make things better, not just to find fault.
2. Look for new and different ways to solve problems.
3. Ask, “How might I ...” instead of saying, “It can’t be done because ...”
4. Look at things from new perspectives or different viewpoints.
5. Frequently ask themselves and others, “What if...” or “I wonder what would happen if...”
6. Keep an open mind and seek original or unusual possibilities.
7. Observe carefully and challenge assumptions (especially beware of what “everyone knows” or what’s “obvious”).
8. Aren’t afraid to “play” with ideas, to let one thing lead to another, and to look for new ways to combine things that aren’t usually considered together.
9. Have a great deal of persistence or task commitment, committing themselves to their work.
10. Demonstrate a great degree of confidence and trust in their own judgment and vision.
11. Avoid allowing “nay sayers” to get the best of them, even when the situation is grim and they feel discouraged.
12. Experiment with and test new ideas to make them better, more complete, or workable, and seek ways to share ideas and make life better.

CLIMATE FOR CREATIVITY AND INVENTIVENESS

- **Create Challenge and Motivation**
 - Stimulate student questioning
 - Ask questions calling for creative thought
 - Discuss the “unknowns”
 - Encourage students to challenge assumptions
- **Provide Freedom for Exploration**
- **Establish Trust and Openness**
 - Defer Judgment (avoid “It won’t work because...”)
 - Use Affirmative Judgment
- **Offer Idea Support**
 - Be alert for good ideas, even if not well-stated
 - Look for underlying function (not just illustration or ornamentation)
- **Permit Liveliness and Dynamism**
 - Student involvement and ownership
- **Playfulness and Humor**
- **Debates (Examining Ideas/Viewpoints)**
- **Minimize Conflicts (Personal Attacks)**
- **Encourage Risk-taking, rather than “Safe” Responses and Conformity**
- **Provide Time for Thought and Action**

TO BE A GOOD INVENTOR,
YOU HAVE TO BE ABLE TO SCAMPER

SUBSTITUTE

COMBINE

ADAPT

MODIFY, **M**AGNIFY **M**INIFY

PUT TO OTHER USES

ELIMINATE, **E**LABORATE

REVERSE, **R**EARRANGE

- taken from Robert F. Eberle

This technique is used to encourage fluency, flexibility, originality and elaboration, the characteristics of creative thinking.

Students can apply the technique to any object as they narrow their ideas for invention.



STEP INTO INVENTION

- I. BRAINSTORM ideas for needed inventions
- II. IDENTIFY ONE PROBLEM for possible invention
- III. RESEARCH originality of idea
- IV. REDEFINE PROBLEM based on research
- V. TEST IDEAS AND MATERIALS for workability
- VI. EVALUATE for best solution using set criteria
- VII. PRODUCE a prototype model of the invention
- VIII. TEST the prototype
- IX. PRESENT the invention to the public
- X. ELABORATE your invention, consider marketing plans, explore patenting your idea

CONTINUE your inventive thinking with other problems!

MINNESOTA STUDENT INVENTORS CONGRESS

JUDGING CRITERIA

Inventions are judged on the basis of problem identification, research, originality and state of completion using the following criteria:

1. The student identified a real need for the invention.

The student needs to explain the problem the invention addresses and how it will make life better or easier.

2. The student documented what similar inventions exist or existed.

This question requires a student to research what exists or has existed to see if the invention is original. This may involve visiting appropriate stores, talking to adults, calling engineers, searching the Internet, etc.

3. This solution appears to be better than previous or existing ones.

The invention should be an improvement over what already exists if it is to improve the quality of life. (Quality of life doesn't necessarily mean practicality)

4. The invention is original, either in the problem it addresses or in the solution.

This is the most subjective question for judges. Has the student identified a unique problem that many of us would fail to recognize? Does the solution evidence thought processes and ways of perceiving that are unusual, yet result in a viable invention? Given everything you've looked at, does this invention stand out?

5. There is sufficient evidence (in the model or research) the invention will work.

Some students will invent something that is technically simple enough for them to build; others will have ideas that cannot be tested but can be researched. Either way, it is important that the student have enough follow-through to take the invention from idea to reality. There should be evidence that the student has this follow-through and that s/he will have something concrete to display.

MINNESOTA STUDENT INVENTORS CONGRESS
NORTHEAST REGIONAL EVENT
JUDGING FORM

GRADE: (Circle One) 4-6 7-12 CATEGORY: _____

INVENTION NAME: _____

STUDENT NAME(s): _____

SCHOOL: _____

JUDGE'S NAME(s): _____

	High					Low					
1. Student identified a need and solution for the invention	6	5.5	5	4.5	4	3.5	3	2.5	2	1.5	1
2. CREATIVITY (invention is distinctive, unusual or special)	12	11	10	9	8	7	6	5	4	3	2
3. INVENTION (well thought-out and thorough in detail)	6	5.5	5	4	3	2	1				
4. Sufficient evidence the invention will work	6	5.5	5	4	3	2	1				
5. LOG (appropriate documentation of the invention process)	6	5.5	5	4	3	2	1				
6. ORIGINALITY (idea is clearly original or a qualitative variation of another idea)	6	5.5	5	4	3	2	1				
7. EXHIBIT QUALITY (display board, artistry, design, appearance)				4	3	2	1				
8. VERBAL PRESENTATION (elaborates on ideas unique to the invention)				4	3	2	1				

TOTAL SCORE: _____ / 50

QUESTIONS THAT JUDGES MIGHT ASK:

1. How did you identify your problem?
2. What were some of your alternate solutions to the problem?
3. Was the invention/innovation difficult to make? What problems, if any, did you encounter?
4. How much do you think this invention would cost to buy?
5. How much did it cost you to make?
6. Why should I buy your invention?
7. Is there a similar invention that performs the same function? Why is your invention better?
8. How does your invention work?
9. What type of research did you do?
10. Did you test your invention to see if it works? How?
11. Did anyone help you with your inventions? (A "yes" answer is acceptable, provided that the adult assisted a young child with construction that might be dangerous. The child should know how the invention works and the processes needed for it to function.)
12. What improvements would you make to the invention?

THINGS JUDGES WILL LOOK FOR:

Inventions are judged on the basis of problem identification, research, originality and state of completion using the following criteria:

1. Is there a log that documents the invention?

The purpose of a log is to document work in progress and have it witnessed. Any ideas, experiments, findings, working drawings or calculations should be included. Spelling and penmanship are not judged.

2. Has the student identified a real need for the invention?

The student needs to explain the problem the invention addresses and how it will make life better, easier, etc.

3. Has the student documented what similar inventions exist (or existed)?

The student needs to research if similar inventions exist or have existed. This can involve visiting appropriate stores, talking to adults, calling engineers or other professionals, etc.

4. Does the solution appear to be better than previous or existing ones?

The invention should be an improvement over what already exists if it is to improve the quality of life. (Note that quality does not necessarily or only mean practicality)

5. Is the invention original, either in the problem it addresses or the solution?

The judges will look for inventions that perceive a problem in a new way, that identify a problem (and a solution) that most of us would fail to recognize, that discover unusual ways to develop a viable solution, or that generally stand out from the other inventions.

6. Is there sufficient evidence (in the model or research) that the invention will work?

It is important that students have enough follow-through to take the invention from idea to reality, even though the invention may not be completely operational. Students should have something concrete to display or illustrate at the MSIC event.

BIBLIOGRAPHY

RESOURCES

THE MINNESOTA INVENTORS CONGRESS AND RESOURCE CENTER

1-800-468-3681 or 507-637-2344, Box 71 Redwood Falls, MN 56283 (General and specific inventing information including patenting, marketing, consumer information and inventor listings)

Using Creative Problem Solving in Inventing

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A PATENT PRIMER

On March 6, 1646, Joseph Jenkes received the first mechanical patent in North America. Issued by the General Court of Massachusetts, it protected his mill for manufacturing scythes. That was the prelude to the U.S. patent system which has helped give birth to major industries that have transformed the way we live.

On April 10, 1790, President George Washington signed the bill which laid the foundations of the modern American patent system. Since that time, the U.S. Patent and Trademark Office has recorded and protected the electric lamp of Thomas Edison, the telephone of Alexander Graham Bell, the flying machine of the Wright Brothers, and the inventions of hundreds of thousands of other inventors.

The patent system has protected inventors by giving them an opportunity to profit from their labors, and it has benefited society by systematically recording new inventions and releasing them to the public after the inventors' limited rights have expired.

A patent is a grant issued by the U.S. Government giving inventors the right to exclude all others from making, using, or selling their inventions within the United States, its territories, and possessions.

There are three kinds of patents: (1) *Utility patents*, granted to the inventor or discoverer of any new and useful process, machine, manufacture, composition of matter, or any new and useful improvement thereof; (2) *plant patents*, granted on any distinct and new variety of asexually reproduced plant; and (3) *design patents*, granted on any new, original, and ornamental design for an article of manufacture.

Utility and plant patents are effective for 17 years from the date issued, subject to the payment of maintenance fees; design patents are effective for 14 years. Patents may be extended only by special act of Congress, except for some pharmaceutical patents whose terms may be extended to make up for time lost due to Government-required testing.

Applications are assigned to examiners who are experts in various fields of technology. The invention must be new, useful, and unobvious to those in that particular field of study. This procedure normally takes about 18 months.

The U.S. Patent and Trademark Office is one of the most unusual branches of the U.S. Government. Its examining staff of over 1,600 is trained in all branches of science and examines thoroughly every application to determine whether a patent may be granted – a task, in these days, involving the most exhaustive research. Not only must the examiners search United States and foreign patents to learn if a similar patent has been issued, but they must study scientific books and publications to discover whether the idea has ever been described. Previous publication, invention or use prevents a patent being issued.

In addition to issuing patents, the Patent and Trademark Office has, since 1870, been in charge of registering trademarks, the business community's most valuable asset. More than 1,400,000 trademarks have been registered.

In its earlier days, the Patent and Trademark Office had on various occasions the responsibility for administering copyright matters, a task that since 1870 has been administered by the Library of Congress; collecting and publishing agricultural information and even collecting meteorological data. For some years, it was the custodian not only of the famous old Patent Office models – the delight of every visitor to Washington for many years – but of the Declaration of Independence, and other historical documents and relics.

By publishing and distributing copies of every U.S. patent, the Patent Office has made available to the public the world's greatest scientific and mechanical library.

The issue of patents for new discoveries has given a spring to invention beyond my conception.

Thomas Jefferson

The patent System added the fuel of interest to the fire of genius.

Abraham Lincoln