

Junior High

Invention
Convention

Invention Convention Timeline

The following is a list of Due dates. The items are due on the date that is listed. Do not procrastinate!

Assignment	Due Date:
Finding An Idea	
Invention Idea Signature Sheet	
Research and Planning	
Build-A-Prototype	
INVENTION COMPLETED! - Photograph of invention - Trial and Error Sheet	
Testing Your Invention/Data	
Backboards to School	
Marketing Poster	
Instruction Manual	
Invention Convention	

Invention Convention Introduction

Welcome to the Invention Convention! You will have the unique opportunity to research an inventor and come up with a new or improved idea that will make life easier and present it at the Invention Convention at Cottage Fair.

The only limit to your invention is your imagination. You have a few choices:

- Make an improvement to an existing product
- Create a new process to something (task, chore, job, etc.)
- Create an invention that fills a need
- Create an entire new product that does not already exist

You will have to build a working model of your invention and present it at the Invention Convention held at Cottage Fair. If you are creating a new process, you can either video-tape it (similar to an infomercial), or you can demonstrate the process at the Convention.

The key to doing well on this project is **ORGANIZATION!** We will work with you to make sure that you have an organized "plan of attack" so that you are not overwhelmed. This can be a very fun project, but you will have to be organized, or you will be experiencing invention insanity!

This is going to be a fun and exciting project, but you must do some research, planning, developing, and testing of your invention. This project will take TIME. Do not plan on waiting until the last minute to create your invention, or you will be in big trouble!

Use your resources! You have a very dedicated Science Teacher that will help you through all aspects of this project, so please, if you need help, **ASK!** You will have to do outside research on this project. Don't be afraid to ask professionals who know something about your invention. Go to the public library! Books are filled with information. Check out the internet. Go to www.howstuffworks.com. This can be a very helpful website for any inventor.

Invention Convention Guidelines

- Your project must have a free standing folded backboard (think Science Fair backboard) that advertises your project. Your backboard must include how your invention improves an existing product, how the new process is better than the existing process, and how the invention fills a need. You also must type an "instruction sheet." See the "Backboard Rubric" for full details.
- No hazardous or dangerous inventions allowed. This includes any invention that contains: potentially dangerous chemicals, open flames, an invention that has the potential to harm anyone and highly flammable materials. If you are not sure if a material or invention will be considered hazardous, ask first.
- Inventions that involve animals are not allowed unless written permission is obtained from the principal or Mrs. Wilkinson.
- Students are expected to carry out their projects with minimum adult help. Projects must be selected with this in mind.
- No late projects accepted. You may not change your idea once it is submitted.
- Select a topic that interests you. Use books, journals, the Internet and other resources to help you in selecting your topic.
- Include a *working model* of your invention. If you choose to improve a process, you must either video-tape the process or demonstrate it at the convention.
- Start early! It's hard to predict how much time you will need to spend on your project before you get involved in it. Don't wait until the last minute!

Finding An Idea

- It is important to note that inventions do not need to be very complex. An invention can be a new product or a new way of doing something.
- Inventions usually solve a problem. For example, a 15 year old inventor got tired of cold ears in winter and invented ear muffs.
- Inventions can be simple-coat hangers, paperclips, staples, and bobby pins or complex like telephones, cars, or DVD players.
- A good invention will be new, unique and original, useful, offers a solution to a problem, clearly described, as simple as possible, safe to use and safe to make.

Start by brainstorming all of the “inventions” that you use on a daily basis:

Pick one thing that interests you and think of an improvement to that idea....

Example: My coffee would taste better in the morning if the coffee maker first filtered my tap water.

Pick three of the gadgets you listed above and make an improvement

- 1.
- 2.
- 3.

Now you are thinking like an inventor!

List the daily chores or tasks you have to perform.

What new idea, product, process, or invention would make this task easier?

List your idea here with a brief explanation as to why it would make a good invention: _____

Invention Idea

Invention Name: _____

What would your invention do? _____

Does your invention improve an existing product? Yes or No

If yes, what product or process does it improve? _____

If yes, explain how it improves an existing product? _____

If no, what does your invention or process do that no other invention does? _____

How does your invention or process fill a human need? _____

Is your invention something that can be easily built and is cost effective? _____

You must get Mrs. Wilkinson’s approval before you begin your project. You may not change your idea once it has been approved, so choose wisely.

Parent or Guardian

Mrs. Wilkinson

Research and Planning

Research: By now you have an idea and an invention in mind. Now it is time to do some preliminary research on your idea to help you build your model or demonstrate your process. You must go the Public Library and find a **MINIMUM OF THREE BOOKS** to include in your bibliography. The books chosen must be related to your project. The books can also be reference sources. You may also include internet sources. Your bibliography must be typed in the appropriate format. You may use www.easybib.com to create your citations.

Literature Cited

You must cite your references using the following format:

Book, Magazine, Etc.

Last name, first name. Year published. *Title*. City published. Pages used.

Example: Firlein, Jessica. 2004. *Adventures of Anaconda Wrestling*. Tempe. Pp1-34.

Internet. (Wikipedia is not a valid source)

Website. Author. Title. Date Viewed.

www.MrsBollRocks.com. Mrs. Boll. *How to Torture Math Students*. 4/1/2004.

Directions: Write your bibliography below using the appropriate format:

Book 1: _____

Book 2: _____

Book 3: _____

Internet 1: _____

Internet 2: _____

Internet 3 _____

Building a Prototype:

- Draw a model proto-type of your invention OR write out your process step-by-step (down to the last detail!).
- Label each part
- Your drawing must be **BIG**. Try to fill up this sheet of paper!
- If you are writing out a process, be as specific as possible with a lot of detail!

Plan of Attack!

Make your life easier and use this check-list to help keep you organized!

- Go to the Public Library
- Bibliography Sheet
- Materials List
- Detailed Invention Sheet OR Detailed process
- Gather Materials
- Build Model OR Demonstrate Process
- Trial and Error Sheet
- Test your model or process
- “Testing your model” Worksheet
- Buy Free-Standing Backboard dimensions: 48” x 36”
- Type info required for backboard
- Double Check rubric
- Put backboard together

Troubleshooting and Redesigning

You will find that building your model will NOT go exactly as planned and there will be some trial and error that will occur. Don't get frustrated! There is ALWAYS a solution and finding the solution will take patience.

Directions: Write down the problems that occurred when you were building your model. Explain how you solved the problems. Use additional pages if necessary. Three problem/solution sets are REQUIRED.

Problem: _____

Solution: _____

Problem: _____

Solution: _____

Problem: _____

Solution: _____

Problem: _____

Solution: _____

Problem: _____

Solution: _____

Problem: _____

Solution: _____

Testing Your Invention

- You have now worked very hard and have finally built a working model of your invention. Now you have to see if it works! Every inventor's project will be different and have different testing methods.
- If your invention requires data collection, you must do so in the appropriate format (table, graph, etc...). Any graphs or tables must be typed or created using MS Excel. Attach them to this piece of paper. Ask Mrs. Wilkinson if you are unsure how to collect your data.
 - If you create a survey, it must contain between 5-10 questions and be given to a minimum of 25 people. The more people surveyed, the more accurate your results.

1. How will you test your invention? _____
2. What data will you collect (must have numerical data!) Include types of measurements and how you will collect the data. _____

3. In the space below create a data table to display your data. Use a ruler!
4. For your backboard, use a graphing program (i.e. Microsoft Excel), to create a graph of your data.

Marketing Poster

On a blank sheet of paper, you will have to create a marketing poster to get consumers interested in your invention. This poster can either be computer generated on PowerPoint or Publisher, or it can be neatly drawn. After all, it is the marketing of the inventions that get companies interested in purchasing the product from you and then give the inventor money! Need inspiration? Check out a magazine or newspaper. These are full of advertisements.

Your marketing poster will have to include the following:

- ✓ Cost
- ✓ Hours to assemble
- ✓ Advertisement
- ✓ Why does everyone need your product? (think cheesy infomercial)
- ✓ Benefits of using your product
- ✓ Catchy slogan
- ✓ Must be in color or neatly colored

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Backboard Rubric

Whew! Your hard work is almost done, and now you must get ready to present all of your awesome work! You are responsible for bringing your back board to school on _____.

Your completed backboard will be due on _____. **Board dimensions: 48”x 36”**

Background (minimum of 1 page):

Your background will include a summary of the worksheet titled “Testing Your Invention.” You must include:

- Why you chose your invention
- How your invention fulfills a human need
- Brief history of your invention
- How your invention improves an existing product
- What inventions/gadgets have been used before your invention to accomplish the same task (if applicable)
- Brief summary on how your invention will be used

Materials:

- Complete materials list
- Cost to build your invention

Development:

- Trial and Error Worksheet

Data Collection:

- Graphs, Tables, Charts etc...

Instructions:

- Typed instructions

Marketing:

- Cost, hours to assemble, advertisement, why does everyone need your product (think cheesy infomercial), benefits

Bibliography:

- Typed bibliography

Grammar ‘n Stuff

All text must be typed!

Each section must have a title!

<i>Background</i>	Title of Your Invention	<i>Development</i>
<i>*Materials</i>	<i>Marketing</i> Poster	<i>*Materials</i>
<i>Instructions</i>	<i>Data Collection</i> Survey Graph or (if needed) Observations	<i>Bibliography</i> <i>Name, Period</i>

*Materials can be placed on either side. Words in italics must be titles!

Board dimensions: 48”x 36”

Awards Categories

Most Marketable Idea

- Easy and fun to advertise
- Target market for advertising
- Something most people would buy for everyday use

Most Beneficial to Humanity

- Improves quality of life
- Materials and process doesn't pollute environment

Most Technologically Advanced

- Shows a lot of detailed thought
- Shows a lot of trial and error for end product
- Involves the use of more advanced scientific materials or ideas
- Incorporates technology

Best Prototype

- Simple idea and construction
- Invention resembles something we are already familiar with
- Invention improves an idea we are already familiar with

Best Use of Resources

- Minimal waste in build
- Resources easily acquired
- Recycling a large part of design
- Applies conservation concepts

Most Economical

- Inexpensive materials
- Inexpensive build process
- Low marketing cost

Best Industrial Design

- Useful to large scale industrial operations

Amazing Effort

- Attempted explanation and construction of invention
- Invention may not work, but good idea with modifications

Men's Choice

- Invention is most likely to appeal to men

Women's Choice

- Invention is most likely to appeal to women

Judge:

PROJECT# _____
Title:

Total:
/

Invention Convention Fair
CRITERIA FOR JUDGING PROJECTS

Total

- I. ENGINEERING GOALS AND DESIGN **30 Points**
- 0 1 2 3 4 5 -Does the project have a clear objective?
 - 0 1 2 3 4 5 -Is the solution workable? Acceptable to the potential user?
 - 0 1 2 3 4 5 -Was the purpose carried out to completion within the scope of the original intent?
 - 0 1 2 3 4 5 -Is prior knowledge and multiple sources of research evident in student development of investigation?
 - 0 1 2 3 4 5 - Instruction Manual procedures clearly outline how to use the product or conduct the process (No personal pronouns)
 - 0 1 2 3 4 5 - Is the solution a significant improvement over previous alternatives?
 - 0 1 2 3 4 5 - Does the project show creative ability and originality in the approach to solving the problem?

Total
/ /

- II. DATA COLLECTION AND ANALYSIS **45 Points**
- 0 1 2 3 4 5 -Results are communicated accurately through appropriate charts, graphs or tables.
 - 0 1 2 3 4 5 -Multiple trials have been used to collect data.
 - 0 1 2 3 4 5 -Has the solution been tested for performance under the conditions of use?
 - 0 1 2 3 4 5 - Validity and reliability of the results is determined and communicated.

Total

- III. COMMUNICATION **20 points**
- 0 1 2 3 4 5 -Is there a sensible and easy progression through the display so that the average person can easily understand it?
 - 0 1 2 3 4 5 -Labels and descriptions are neat, grammatically correct and sufficiently explained.
 - 0 1 2 3 4 5 -Are required elements included in the display (title, data/results, materials & instruction manual, marketing, bibliography)
 - 0 1 2 3 4 5 -Logical arguments related to correlation and/or relationships between variables is presented.

Total

- IV. SCIENTIFIC INNOVATION **15 points**
- 0 1 2 3 4 5 -Are the use of materials and/or resources ingenious?
 - 0 1 2 3 4 5 -Does the invention present a novel approach to the topic?
 - 0 1 2 3 4 5 -Does the invention demonstrate critical and/or analytical thinking?

0= not presented 1=below standard 2= minimum standard 3=average 4=above standard
5=exceptional/outstanding

Invention Convention Questions

Judges, as you meet with the students, here are some questions to guide your discussion. Please limit your interaction to 3 minutes or less so that all students have an opportunity to speak with a judge.

Why did you choose your project?

How did you come up with this design?

What was the most challenging aspect of the project?

How does your design/process improve upon the existing product or process?

When you were designing your project, did you have to modify your design or change anything?

Does your invention look anything like the original prototype you drew?

What did you learn the most from going through the process of designing and building the invention?

Name: _____

Project Title (on board): _____

Back board Grade Sheet.

Each item is worth 2 points. Titles are italicized.

- Background Title*
- Background Sheet
- Materials Title*
- Materials Sheet
- Instruction Manual Title*
- Instruction Manual Sheet
- Title of your project*
- Marketing Title*
- Poster
- Data Collection Title*
- Survey/ Graph or Observations
- Development Title*
- Trouble Shooting and Redesigning Summary
- Bibliography Title*
- Bibliography Completed

/30

Name: _____

Project Title (on board): _____

Back board Grade Sheet.

Each item is worth 2 points. Titles are italicized.

- Background Title*
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- Instruction Manual Sheet
- Title of your project*
- Marketing Title*
- Poster
- Data Collection Title*
- Survey/ Graph or Observations
- Development Title*
- Trouble Shooting and Redesigning Summary

/30

- ❑ *Bibliography Title*
- ❑ Bibliography Completed