

Criteria Page

The following six criteria must be met in order to fulfill your obligation in the STEAM Fair.

- 1) Intent to Invent sheet
- 2) Tribute to an Inventor
- 3) Research and Development sheet
- 4) Marketing Proposal
- 5) Developing and Testing (Prototype)
- 6) Trifold Board

Your Task: Working with your assigned group members (3-4 per group) you will brainstorm an idea for a new invention, service, or original combination of existing products. You will create a marketing plan and ultimately show “the sharks” that your product or service is something worth investing in. *The objective is to take an idea that will benefit society, make it a reality and make a profit!*

The Invention Process

Getting Ideas

Your idea for an invention will come from something that you or someone you know needs.

Option 1: One method of establishing an idea is called *brainstorming*. You can brainstorm with your group to establish an idea for your invention. Here is an example of how brainstorming works. Name an object such as a lunchbox. Take ten minutes to create a list of everything you can think of that is wrong with lunchboxes (i.e. they do not keep your drink cold. Next, find a way to correct some of the problems (temperature controlled inside of the lunchbox). Your ideas for solving the problem can be a big step toward inventing a new or improved product.

Option 2: Another strategy is to focus on a problem that you may have noticed in our society. You may want to consider environmental problems we are experiencing more frequently today (i.e. pollution, cell phone radiation, earthquakes, hurricanes, etc.) and propose an invention or plan to combat these problems to improve the world we live in.

Interested in Helping the Environment?

Topics to Research

Once you brainstorm a topic that interests you, begin your research. Identify if this is a problem only in the United States or in other countries as well. Begin to identify what has been done in the past to help improve these problems and what your group can create to further help our society in the future.

- Landfills, Waste Management, Recycling
- Forest Destruction/Deforestation
- Endangered Species and Loss of Biodiversity
- Water Conservation and Fresh Water Shortage
- Shrinking Wetlands and Aquatic Habitats
- Threats to Waterways (Poorly Managed Fishing, Pollution, Coastal Tourism, Erosion of Beaches, Shipping Entries)
- Global Warming
- Climate
- Air Pollution
- Ozone Depletion
- Greenhouse Gases
- Fossil Fuels and Renewable Energy
- Noise Pollution

Additional Ideas can be found:

<https://www.sciencebuddies.org/science-fair-projects/project-ideas/environmental-science>

<https://populationeducation.org/environmental-science-fair-projects-30-eco-friendly-ideas/>

For students interested in LISC and LISEF:

Behavioral Science - *Analyzing human and animal behavior including psychology and sociology*

Biology – Animal/Plant - *Non-human animal and plant studies can be placed in this category including physiology, nutrition, growth, development, evolution*

Biology – Medicine/Health - *Human related studies should be placed in this category including biomedical engineering, medical devices and imaging, human physiology, immunology, human nutrition, biology of disease, disease detection/diagnosis/prevention/treatment*

Biology – Microbiology/Genetics - *Microorganisms, cellular, molecular, and genetic projects can be placed in this category including bacterial studies, protists, unicellular fungi, antimicrobials, cell physiology, bioinformatics, biotechnology*

Chemistry - *Analytical chemistry, biochemistry, computational chemistry, environmental chemistry, inorganic or organic chemistry, material science, water chemistry*

Earth-Space-Energy Resources - *Atmospherically science, climate, geology, astronomy, energy resources including fuels, physical energy such as water, nuclear and solar power*

Ecology - *Studying interactions between organisms and their environment. This can include bioremediation, pollution control, resource management, human or other effects on ecosystems*

Physics/Physical Science - *Atomic, biological, molecular, and optical physicals, nuclear and particle physics, theoretical, computational, and quantum physics or middle school physical science projects*

Name _____

Date _____

Intent to Invent
due October 24th, 2018 to Science Teacher

Directions: Being as *careful* and as *thorough* as possible, fill in this Intent to Invent form making sure it is legible and contains no errors in grammar. Be sure to use complete sentence and paragraph structure.

I, _____ intend to invent _____

_____.

In the following space, describe as carefully as possible, your invention. What do you want to improve upon or develop?

How can I use the Engineering Design Process to improve an invention or create a new one?

What materials will you be using in constructing your invention?

What science concepts would help to prove your invention would work?

Name _____

Date _____

Tribute to an Inventor

Outline *due November 21st, 2018 to ELA Teacher*

Research Paper *due December 14th, 2018 to Social Studies Teacher*

Revisions/Final Copy *due January 7th, 2018 to ELA Teacher*

Directions: Now that you have an idea for an invention, what do you already know about this item? Focus on originality. If an inventor has an idea, it is important to know what already exists so that the inventor does not waste time “reinventing the wheel.” Research items to the one you want to invent to ensure you are creating a new, original product.

Research to connect your product to an inventor who has proposed a possible solution to the problem you are investigating. In a well-developed essay:

- Describe what that inventor was responsible for inventing
- Describe how their research has benefited you or society
- Describe how your product would enhance the already designed invention
- Describe how your product will benefit society/the environment

When composing your research paper, be sure to:

- Plan before you write
- Use specific details in your writing
- Use proper citation from sources you used.

Be sure to check your writing for correct spelling, grammar, capitalization, and punctuation.

Name _____

Date _____

Research and Development
due January 18th, 2019 to Science Teacher

Before an invention can be successful, you have to make a plan. Your plan should include all the steps you can think of, from beginning to end.

Directions: Answer each of the following questions as carefully as possible in order to provide a description of the research and development work done on your invention.

What is your company called? _____

What is your product called? _____

Group Member Names: _____

- 1) Based on the product you want to create, research the cost of the materials. **Remember:** *you will need to determine the total cost for one item.*

- 2) Based on the cost of materials, how much would you sell your product for? **Reflect On:** *Would people pay this price? How many buyers do you estimate?*

- 3) Who will be the target audience most likely to purchase your product? Why?

- 4) What is your company slogan? **Remember:** *A slogan should be memorable and grab the audience's attention.*

5) How do you plan to advertise your product?

Choose an advertising medium (billboard, jingle, print, online, etc) that is likely to reach the greatest number of people buying your product. **Hint:** *Think of advertisements you see today. What catches your eye? What about the advertisement makes you want to buy the product? How can you appeal to your target audience?*

6) How much does it cost to advertise on this medium?

7) What would be the total cost to create and advertise your product? How much would it have to sell for to make a profit?

1. Inventor: per-unit price
2. Marketing Director: advertising budget

8) Research a similar product and its growth to convince the sharks that your idea is the right investment.

Reflect On: *Who is your competition, and why are you better?*

8) How did you test your invention and how did it work? If you can not test your invention, what scientific methods can support the idea that your product would work?

Name _____

Date _____

Marketing Proposal
due February 1st, 2019 to Math Teacher

Pitch your product to the sharks (investors).

- Prepare a two minute speech that summarizes your product and convinces others the importance of your product. Use the questions below to guide your speech.

1. Know your numbers

- Investors are going to want to know what is the cost of production per unit?
- What are you selling it for in retail? What are your profits?

2. What retailers are you planning to work with?

3. How are you getting the word out? What is your marketing strategy? (i.e commercial, website, jingle, etc.)

4. What is your logo? Slogan?

5. Why is your product better than anything on the market? How will it benefit society/the environment?

- Remember – Be persuasive! You want the customer to want your product and want to pay you for it!

Developing and Testing
due March 29th, 2019 to Social Studies Teacher

Illustrating Your Invention - *Drawing your ideas*

What will it look like?

- All inventors make drawings of their inventions to show how they work.
- Draw some quick sketches of these ideas and pick what you think will look and work the best.
- Show all the parts of your invention and label them clearly so that others will be able to understand how your invention works and looks.

Making a Model

- Now that you have a name for your invention and a drawing of it, you can make a model of your invention.
- A model will make your invention more interesting and will show how it works.

Invention Display Guidelines

due March 29th, 2019 to Social Studies Teacher

Trifold Board – Display your project

- Include important information to “pitch” your product.
- Include important information from your research paper explaining why you chose your project.
- You may want to include the information gathered from all the worksheets completed throughout the course of the project
- Include any logos, slogans, illustrations that help to advertise your product.

<p style="text-align: center;">Intent to Invent Info</p> <ul style="list-style-type: none"> ❖ Product description/use/purpose ❖ What steps did you take to determine that your invention was original? ❖ What materials will you be using in constructing your invention? ❖ What science concepts would help to prove your invention would work? <p style="text-align: center;">Research and Planning</p> <ul style="list-style-type: none"> ❖ Research related to your invention ❖ “Tribute to an Inventor” Summary <p style="text-align: center;">Development of Your Invention</p> <ul style="list-style-type: none"> ❖ Timeline ❖ Step-by-step procedure ❖ Engineering/design process <p style="text-align: center;">Description of how your invention works</p>	<p style="text-align: center;">STEAM Fair Project Sample Tri-fold Board</p> <ul style="list-style-type: none"> ❖ Be sure to use proper spelling, grammar, and capitalization ❖ Use large and legible font <ul style="list-style-type: none"> ❖ Include titles ❖ Be creative! <p style="text-align: center;"><u>due on March 29, 2019</u></p> <hr style="border-top: 1px dashed black;"/> <p style="text-align: center;">Product Name</p> <p style="text-align: center;">Company Name</p> <p style="text-align: center;">Logo</p> <p style="text-align: center;">Slogan</p> <p style="text-align: center;">Product Advertisement</p> <ul style="list-style-type: none"> ❖ Information from Research and Development Form such as: <ul style="list-style-type: none"> ❖ Cost of materials, cost of advertising ❖ Selling price of invention ❖ Target audience ❖ Marketing strategies: websites, jingle, flyers, pamphlets, brochures, etc. ❖ Include any pictures of your prototype 	<p style="text-align: center;">Data about Environmental Trends</p> <ul style="list-style-type: none"> ❖ Graphs ❖ Charts/tables ❖ Drawings/pictures <p style="text-align: center;">Product Analysis</p> <ul style="list-style-type: none"> ❖ Problems/obstacles encountered ❖ Improvements made from start to end of project ❖ Plans for future improvements <p style="text-align: center;">Conclusion</p> <ul style="list-style-type: none"> ❖ Benefits to society/environment ❖ Qualities that make your invention unique/important/valuable <p style="text-align: center;">Works Cited (MLA format)</p>
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