

WITH THIS BOOK I CAN INVENT THE FUTURE!

| Student Name: | | |
|------------------|--|--|
| School: | | |
| School District: | | |
| Grade: | | |
| Teacher's Name: | | |

www.inventionconvention.org

WELCOME INVENTORS!

CONVENTIO

Inventor tips for filling out your journal:

- Record your thoughts, activities, *research* and discoveries on these pages as you work to create your own invention.
- \checkmark Print legibly and be as clear as you can with your responses.
- ✓ It's best to use a dark blue or black pen on your final journal copy.
- ✓ If you are working on a team you need only one journal, but both team members should work together and both should sign the journal.
- ✓ If you are chosen to participate in the Invention Convention Competition (local or regional), you will need to show this book or a similar journal or inventor's log to the judges.

LET'S EXPLORE SOME TERMS

brainstorm - to produce an idea or way of solving a problem by holding a spontaneous group discussion.

data collection - is the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypotheses, and evaluate outcomes.

design - to plan and make decisions about (something that is being built or created) : to create the plans, drawings, etc., that show how (something) will be made.

experiment - a scientific procedure undertaken to make a discovery, test a hypothesis, or demonstrate a known fact.

hypothesis - a supposition or proposed explanation made on the basis of limited evidence as a starting point for further investigation.

original - created directly and personally by a particular artist; not a copy or imitation.

problem - a matter or situation regarded as unwelcome or harmful and needing to be dealt with and overcome.

prototype - an original or first model of something from which other forms are copied or developed.

research - the systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions.

solution - something that is used or done to deal with and end a problem : something that solves a problem.

test - a procedure intended to establish the quality, performance, or reliability of something, especially before it is taken into widespread use.







INTRODUCTION TO INVENTING

There are just five main steps to completing the invention process:



Agriculture

Manufacturing Energy What problems can you find Environmental Organization Animal Architecture/Building Safety Financial in these industries? Arts Food Sports Communication Healthcare Transportation Household Education

Keep an open mind to new industries and ideas as you seek out the *problem* you want to solve!

Here are examples of how you can *brainstorm* to find your *problem*:

Write out all the ideas you come up with when you brainstorm! Who can you brainstorm with? A parent, friend, class, teachers, siblings, who?

Most people spend more time and energy going around problems than in trying to solve them.

Henry Ford (1863 - 1947) **American Industrialist and** Founder of the Ford Motor Company

1. FIND A PROBLEM

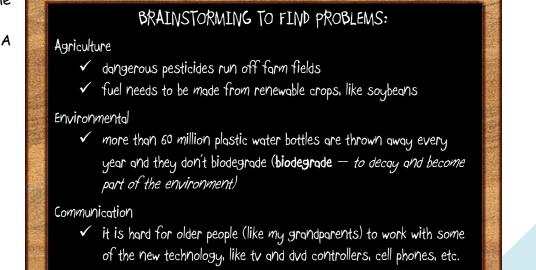
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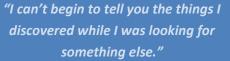
A great way to get started finding a problem is to use a technique called brainstorming.

Problems can be found everywhere. Using the "brainstorming"

technique, select one or more industries below where you think it will be interesting to find problems. Then - do your *research* to find out what problems impact that industry? Local news, professionals in the industry, trade publications (magazine about a particular topic), and libraries are all great ways to start your *research*.

Come up with as many ideas as you can.



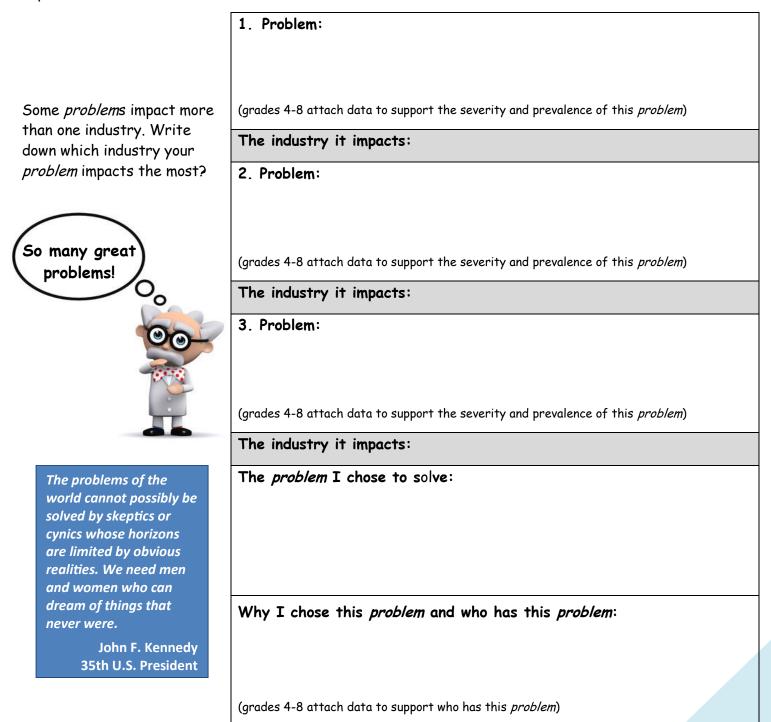


— Shelby Foote



ONVE

Document <u>up to</u> three of the *problems* you uncovered in your *brainstorm*ing and the industry each *problem* impacts:



2. IDENTIFY A SOLUTION

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Research to identify as many existing *solutions* to your *problem* as you can. Professionals in the industry, trade publications (magazine about a particular topic), the internet and libraries are all great ways to start your io *t*.

Now that you know what *solutions* (if any) already exist, *brainstorm* to identify new *solutions* to the *problem*.

- ✓ There can be many solutions to a single problem. Your goal as an inventor is to find as many solutions as possible so that in the end you can select the best solution for your problem.
- Keep an open mind as you look for solutions. Just because something has not been tried before does not mean that it will not work!
- ✓ Who can help you *brainstorm solution* ideas?

Document <u>up to</u> three of the *solutions* you found:

Solution #1:

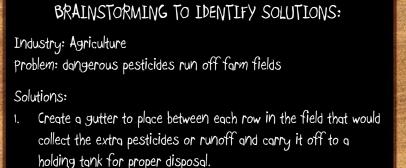
What materials will you need?

Will you need special tools?

What help will you need from others?

What will be involved in turning this idea into a solution?

What do you think will happen when you try it? This is called your hypothesis.



- 2. Create a safe pesticide that won't hurt people or animals.
- 3. Invent a noise or smell machine that scares pests away so that harmful chemical pesticides are not necessary.



IDENTIFY A SOLUTION (CONTINUED)

Solution #2:

What materials will you need?

Will you need special tools?

What help will you need from others?

What will be involved in turning this idea into a solution?

What do you think will happen when you try it? This is called your hypothesis.

Solution #3:

What materials will you need?

Will you need special tools?

What help will you need from others?

What will be involved in turning this idea into a solution?

What do you think will happen when you try it? This is called your hypothesis.

Choose the *solution* you will move forward with:

JOURNA

3. DESIGN YOUR PROTOTYPE

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(SIGNATURE(S) REQUIRED FOR THIS SECTION)

So that you can demonstrate your invention you are required to *design* and build a *prototype*.

Prototype Requirements:

- ✓ Your teacher must sign off on your *solution*/invention before you begin building your *prototype*.
- ✓ Any *test*ing on animals must be signed off on by a licensed Veterinarian.
- Prototype and display combined must be no larger than 2'x3' and be able to set on a table top.
- ✓ Does not have to be a working model, but you need to be able to explain how it would work.
- ✓ Electricity may NOT be used at regional finals. Batteries are fine.
- ✓ Inventors may not use lighters, matches, candles or any other open flame or heat source or anything material or liquid considered combustible.
- ✓ Inventions may not contain biohazards or utilize any materials that are, or could become dangerous.
- ✓ Demonstrations/presentations may not include human beings or living creatures.
- Data Collection (additional requirement for grades 4-8): The information documented during data collection tells a story, and allows others to interpret the data. Inventors grades 4th 8th are expected to employ data collection during the invention process. Talk with your teacher about the best way to collect and show this data within your journal and/or presentation. Feel free to add additional pages to your journal if necessary.

Originality:

It is very important that your *solution* is *original* and does not already exist.

Great places to *research* to find out if your idea already exists:

- Libraries
- The Internet
- Stores
- Books

- Professionals in the Industry
- Trade Publications (magazine about a particular topic)
- United States Patent and Trademark Office by visiting: <u>http://www.uspto.gov/</u>

On the next page document your *research* to ensure your idea is *original*.

.



STUDENT JOURNA

Steve Jobs



DESIGN YOUR PROTOTYPE (CONTINUED)

| Student Name: | | | | |
|--|--|--|--|--|
| The <i>solution</i> I chose: | | | | |
| | | | | |
| (grades 4-8 attach data to support the <i>solution</i> you chose) | | | | |
| Where I looked to see if my idea is new: | | | | |
| 1. | | | | |
| | | | | |
| 2. | | | | |
| | | | | |
| 3. | | | | |
| | | | | |
| Document any similar inventions you found, describing how yours will be different: | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| Teacher Signature <u>REQUIRED FOR ALL PARTICIPANTS</u> | Veterinarian complete this section <u>IF</u> any animal <i>test</i> ing will take place. | |
|---|---|--|
| I approve of the <i>solution</i> /invention my student ha chosen to pursue and agree that it not only meets the <i>prototype</i> guidelines shown on the next page and but that it is also safe. | I find the <i>solution</i> /invention this inventor has chosen to pursue will not be harmful in any way to animals. | |
| Teacher's Name (Printed) | Licensed Veterinarian Name (Printed) | |
| Teacher's Signature Date | Licensed Veterinarian Signature Date | |



4. CREATE YOUR PROTOTYPE

It's time to create your prototype!

- ✓ Be sure to follow the *Prototype* Requirements on page 7.
- Don't forget what we said about originality, your invention must be a new idea.

To invent, you need a good imagination and a pile of junk.

Thomas A. Edison

✓ You can create your *prototype* out of items you have around your house, school or that you can borrow. It is not necessary to spend money to make your *prototype* remember a *prototype* is just the first model of your invention - A model used to demonstrate your invention.

 ✓ Have an adult help you as needed when using power tools or other equipment that could be dangerous.



Most often your *prototype* will not be perfect at first, and that's okay, because imperfections give you the opportunity to make improvements. Keep trying and keep a record of how *test*ing goes, the challenges you face and the changes you make to the *prototype*.



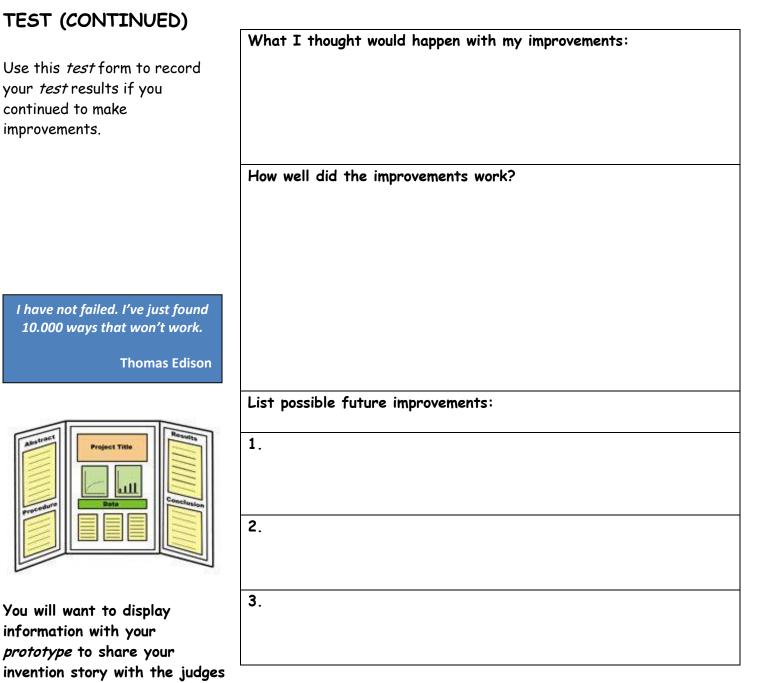
5. TEST

| Let's try it! | What I thought would happen (my <i>hypothesis</i> from page 5 or 6): How well did it work? If it did not work right, don't give up - try to <i>experiment</i> with your <i>solution</i> another way. |
|---|--|
| Testing leads to failure, and failure leads to understanding. Burt Rutan | |
| | List possible improvements: |
| Could you make it out of more durable materials? Could you make it bigger, | 1. |
| smaller, miniature or portable? | 2. |
| Does it need to be waterproof? | |
| What changes will make it work better? | 3. |

Use the next page to record your *test* results if you made improvements.

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and others.

- Will you use a tri-fold or poster board?
- Will you display your research, surveys and/or testimonials?
- Will you display images of you building and testing your invention?
- What more could you include?

Remember - Your *Prototype* and display combined must be no larger than 2'x3' and be able to set on a table top.

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| Name of my invention: | | |
|-------------------------------------|-------|-------------------------------|
| <i>Problem</i> my invention solved: | | |
| How my invention works: | | |
| | | |
| | | |
| | | |
| When I first thought of my idea: | | |
| Date: | | |
| My Name (printed): | | - |
| My Signature: | Date: | |
| Witness name (printed): | | in protecting <u>my</u> idea. |
| (someone not related to you) | | |
| Witness signature: | Date: | _ |
| | | |

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Function/Proof - How my invention solves the *problem*:

Basic diagram of my invention with parts labelled:





Materials I used to make my *prototype*:

Observation - Where I discovered the *problem*?

Research - Who has this problem:

My Team - Who helped me come up with the ideas? (who were my assistants)

About Me - What I liked most about being an inventor?



Dear Inventors,

I want to thank you for taking the time to document your invention process. It is not an easy thing to do and it is a skill that takes time, practice and determination.

Thank you for sharing your creative, imaginative and well *test*ed ideas with us! It's important that you remember the process that you went through to invent because it will be the same process that you continue to use every day when you identify a *problem* and think critically to identify the possible and best *solution*. Again, it is a skill that if you learn and practice regularly will be one that you'll use wherever your future takes you.

There is a quote that I heard years ago when I started working with the Invention Convention program and it stuck with me so I'd like to share it with you.

I believe it is possible to learn how to think, you've proven that through your completion of not only this

journal but the Invention Convention program and you'll continue to do it each and every day.

I look forward to seeing your inventions and hearing about your successes. Be sure to protect your mind and your ideas, we believe in you. Your uniqueness and creativity are two of your most powerful assets.

Keep us up to date on where your inventing takes you, and we wish you the best of luck in all you do!

Sincerely, Veronica Lynagh Executive Director Invention Convention "Every Possibility Exists in a Child's Mind"

The Invention Convention is an education non-profit organization, completely funded by generous personal & corporate donors.

Thank you to our sponsors who have made the continued growth of this program possible for Ohio's young inventors.

is possible, and always to think for themselves. --- Robert Hutchins.

It must be remembered that the purpose of

education is not to fill the minds of students

with facts... it is to teach them to think, if that

STUDENT JOURNA

American Education Philosopher





UITION TRUST AUTHORITY

CollegeAdvantage

() Huntington



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