

# MY INVENTION LOG



## WHAT IS AN INVENTION?

An **INVENTION** is something new that helps solve a problem by doing something better or easier.

## WHAT IS A PROCESS?

A **PROCESS** is a series of steps that are taken to accomplish something.

## WHAT IS A PROTOTYPE?

A **PROTOTYPE** is an early version of a product that helps the inventor visualize different options for a design or solution.

# 7-STEP INVENTION PROCESS

Identifying

**Identifying** a problem means using brainstorm and research to discover problems and who might have them.

Understanding

**Understanding** the problem means getting to know more about what is causing the problem and what you want to happen when the problem is solved.

Ideating

**Ideating** means thinking about, brainstorming, and researching different ideas and options to solve the problem.

Designing

**Designing** means deciding what your invention solution will be made of, what it will look like, and how it will work.

Building

**Building** means creating a prototype based on your design and using the materials and the process you have decided to use.

Testing

**Testing** your solution is how you find what works and what doesn't. This is where you modify or change your design, and test those changes. This process is repeated until your invention or prototype works well.

Communicating

**Communicating** means explaining the problem, the research you did, how your invention solves the problem, who might use your invention, your process in creating this invention, and how you might make it even better.

## Hint:

The lighter arrows show the general order of the Invention Process.

The arrows on the side mean that you may find you need to repeat some steps.

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# MY INVENTION LOG



## Purpose of this Invention Log

- The Invention Log tells the whole story of your process as it is happening- **NOT** after it happened.
- It's an important part of the invention process because it's a complete and accurate record of your ideas, plans, and processes as your **invention** and **prototype** is created
- The Invention Log can be a part of your final presentation
- The Invention Log can even be used as part of the patenting process

## How to Use the Invention Log

- Follow the Invention Process Steps and fill out the pages as you work on them
- Sometimes, you may find yourself going back to a step in the Invention Process- that's okay (and sometimes it even causes new ideas to happen)
- You may not need to use every page OR you may need to copy pages because you want to use them more than once!
- When you're done with any page, add the date at the bottom
- Use complete sentences (except where you're asked to make a list of ideas, materials, etc.)
- Teams share one Invention Log and it should include signatures of both inventors

## Blank Pages

- There are many places in this Invention Log where it says to **"make a list"**
- The **QUANTITY**, or amount, of ideas you get will stretch your thinking and your creativity
- Your better ideas are usually **NOT** the first ones you get!
- If you need extra space, make copies of the blank pages and place them where you need them (or use the back of pages)- **ADD DATES TO YOUR BLANK PAGES**
- You can also copy and use any other page over again-
- You can take pictures of your process and add them to blank pages

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**1st Inventor name**

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**2nd Inventor name (if a team)**

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**Hint:**

If there is an Inventor Team, both inventors will contribute to and sign **ONE** Inventor Log

## HOW TO IDENTIFY PROBLEMS

Here are some prompts and questions you can ask yourself at the beginning of your Invention Process! The bigger the list, the more likely you'll find something that needs a solution.

**Hint:** List as many thoughts for each prompt as you can. Use more pages if needed!

What tasks would you like to see made easier?

Brainstorm a list of **activities** or **products** that annoy or frustrate you. List as many as you can!

What things don't work as well as you'd like them to work? Add details if necessary.

What are some things you would like to see work better at.....

- Home?
- School?
- In the car?
- On the bus?
- At the supermarket?
- At practice?
- Where else?

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## HOW TO IDENTIFY PROBLEMS OTHER PEOPLE MAY HAVE

**Be an interviewer!** Someone you know may have things that frustrate them too.

**Hint:** Empathy is when you're able to see another person's point of view and understand what that person is feeling.

Ask questions to different people in your family and other adults you know. Sometimes they may be frustrated with things that you may be able to help them solve by looking at things differently. Make sure you ask for details to help with understanding their problems and their **perspectives**.

**EXAMPLE:** My mom told me, "The seatbelt in my car rubs against the side of my neck when I am driving because I am shorter than most drivers. It really bugs me and it doesn't seem safe!"

Ask people:

What tasks would you like to see made easier?

What things don't work as well as you'd like them to work?

What are some things you wish would work better at.....

- Home?
- Work?
- In the car?
- In the yard?
- At the supermarket?
- At practice?
- Where else?

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## SCAMPER is a tool to help you identify a problem to work on

- It can be used early in your Invention Process but it can also be used later.
- Use it as a way to improve your idea, give it more features, or make it more valuable to the people who will use it.
- Use the questions and statements below, in combination with the verbs within the circles and see where your creative thinking leads you! (Create your lists on blank pages)

What if I \_\_\_\_\_?  
How might I \_\_\_\_\_?  
What would happen if I \_\_\_\_\_?  
How might things change if \_\_\_\_\_?

# SCAMPER

(COOL QUESTIONS FOR CREATIVE THINKING!)

It might be surprising when \_\_\_\_\_!  
It would be interesting if I \_\_\_\_\_!  
It might be more useful if I \_\_\_\_\_!  
It would be funny if I \_\_\_\_\_!

Substitute

Combine

Adapt

Modify

Put it to  
another  
use

Eliminate

Rearrange

# IDENTIFYING & UNDERSTANDING



## SCAMPER WORKSHEET

If you want to practice **SCAMPER**, use a common object such as a paper bag, paper clip, comb, etc. Read each question (or listen to someone read them). Imagine in your “mind's eye” what changes might happen to those objects if you made them based on the questions! Write down your new ideas.

**Hint:** You can use this worksheet for practice, to identify problems, OR as a way to get more ideas during the IDEATING step later

What if I...	Now, it can.../Now, it will...
<b>Substitute</b> What materials can you change or swap? What if someone else was involved? What are some other approaches?	
<b>Combine</b> What other things/ideas can you combine? What features can you combine?	
<b>Adapt</b> What else is like this? How else might it be used?	
<b>Modify</b> How can you change the form? <b>Magnify</b> What if parts were stronger? Higher? Longer? Wider? <b>Minify</b> What if the whole or parts were smaller?	
<b>Put to Other Use</b> What are new or different uses?	
<b>Eliminate</b> What parts can be removed?	
<b>Reverse/Rearrange</b> Interchange components? New pattern or layout? Can the features be rearranged? Can the order be changed? What if the action was opposite?	

# IDENTIFYING & UNDERSTANDING



## PICK THE PROBLEM YOU WANT TO WORK ON

Use the following questions to give **more details** on the problem you want to create a solution for.

What problem are you trying to solve? **WHO** are you solving it for and what is their **NEED**? **WHY** is it important to them (or you)? The more specific you are in describing the problem, the better your solution will be. How did you come up with the problem?

**WHAT** is the result you are trying to achieve? If you solved it, **WHO** would it help? Who else? **WHY** will this be better than what already exists?

The more specific you are in describing the result you want, the better your solution will be.

# IDEATING

## WAYS TO COME UP WITH MULTIPLE IDEAS FOR YOUR

**PROBLEM** Here are four different tools you can use to come up with **LOTS** of ideas!

**-MILD TO WILD:** What is the mildest way to solve it all the way to what is the wildest way!

**-COMBINATIONS:** What if you combined 2 (or more) thoughts together? How might that change or improve your solution?

**-FORCED CONNECTIONS:** Try looking at something that has absolutely nothing to do with your idea! Now... connect a characteristic of that object with your idea. You might surprise yourself with unusual ideas!

**-SCAMPER:** This is a great time to use **SCAMPER** again!

### Early in the process, here are some rules to follow:

Don't judge ideas as either bad or good

Go for as many ideas as possible!

Combine your ideas to make them better or different

Look for wild or funny ideas... you may surprise yourself!

# IDEATING

## PICK YOUR TOP 5 SOLUTIONS!

What are the pros and cons of each? How did you decide which solution to try?

Ask your friends and family which ideas they think are strongest as a way to help you narrow down your concepts.

The more specific you are in describing the solution you will create, the better your invention will be.

**HINT:** Even your favorite ideas will have cons. Take the time to come up with some ways to overcome them! This will strengthen your final invention (**use blank pages and don't forget to date them**).

Possible Solutions	Pros	Cons
1.)		
2.)		
3.)		
4.)		
5.)		

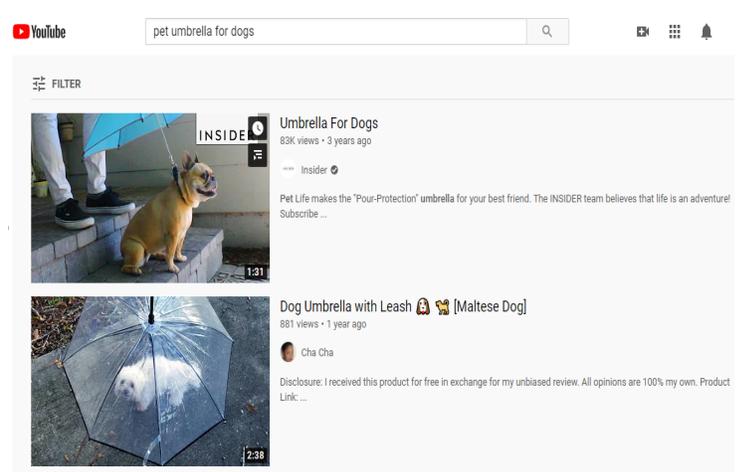
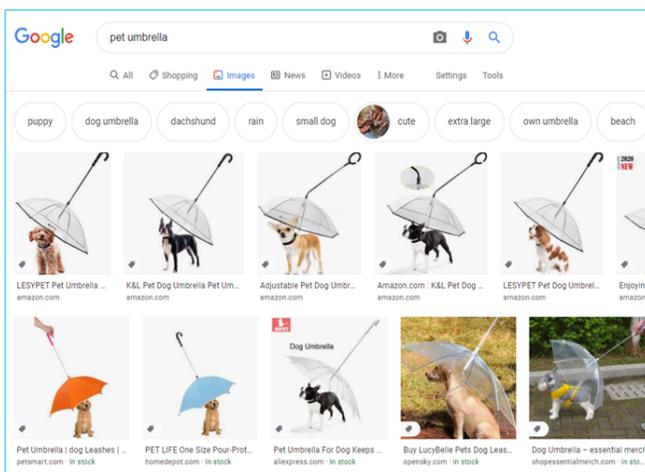
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## DOES MY IDEA EXIST?

## HOW DO I SUPPORT MY SOLUTION WITH DATA?

### To check for Products:

- Use Google; click on "images"
  - Use simple terms, eg. "pet umbrellas" or "umbrellas for pets"
  - This is better than going directly to Amazon; it will give broader results
- YouTube.com is also a resource for videos or commercials



### If you discover your idea already exists:

How might you improve or change it to add significant value?

- Use Divergent Thinking tools such as
  - Brainstorming
  - SCAMPER
  - Forced Connections

For Patents or Trademarks (names):

- Use [www.uspto.gov](http://www.uspto.gov) or [www.patents.google.com](http://www.patents.google.com)

For **Research** to provide **Data** for your presentation:

- Use Google and ask relevant questions
  - "How much rain falls in the United States?"
  - "How many umbrellas are sold in a year?"
  - "Are animals safe in the rain?"

# IDEATING

## DO YOUR RESEARCH

### DOES MY IDEA EXIST ALREADY?:

What research did you do to see if this invention had been done before?

If it exists, how might yours be different and better? Who did you talk to? Where did you look? What website did you search?

You should show at least 4 pieces of evidence of different types of research, including—talking with experts, searching the Internet, interviewing friends and family as to how useful this would be, etc.

**EXAMPLE OF INTERNET SEARCH TERMS:** "Seatbelt Neck Protector"

**HINT:** See the previous page for examples.

Where I looked to see if my idea is new and what I learned:

(Include how you will make your idea different. Use as much paper as you need!)

**A.**

**B.**

**C.**

**D.**

# IDEATING



## DO YOUR RESEARCH

### WHAT ELSE SHOULD I RESEARCH?:

It's important to give some background about **WHY** your solution is important. This **DATA** will be very helpful when you do your presentations (Display Board and Video Presentation).

### EXAMPLE OF SOME INTERNET SEARCH QUESTIONS FOR "Seatbelt Neck Protector"

1. "How many injuries result from not wearing seatbelts?"
2. "What are the average heights of men and women?"

List your questions and write down the information you learned.

Make sure you also list the source of your information!

Write down what you learned (include your sources). Use as much paper as you need!

**A.**

**B.**

**C.**

**D.**

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## FINISH YOUR RESEARCH

After documenting any similar inventions, draw or describe how yours will be different:

click above to upload image

### Teacher Signature - REQUIRED FOR ALL PARTICIPANTS

Teacher/Caregiver Name (Printed):

Teacher/Caregiver Signature

Date

I approve of the solution/invention this student(s) has chosen to pursue and agree that it not only meets the guidelines shown on the Restrictions and Requirements page (in Teacher's Invention Log Guide), but that it is also safe.

# IDEATING & DESIGNING



## CREATE AND IMPROVE YOUR DESIGN

Sketch or draw the invention you are thinking about building.

Label all the important parts and features. Explain how the invention will work.

(If you need more space, use more paper!)

**HINT:** When you sketch, you may come up with more ways to improve. Save and add dates to them all and put them to your Invention Log to show the progress of your thinking!

click above to add image. click below to add text

# IDEATING & DESIGNING



## SHOW YOUR WORK

What problems or issues might you encounter with this design?

Who did you talk to about this design (another student, parent, teacher, etc.)?

What were their comments about your design?

(Include interviews and comments on additional pages, if necessary)

How can you fix those problems or address those issues?

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**Hint:** Repeat the previous steps until you have a design that you think will work.  
Add additional pages for all steps when necessary. Remember to add dates!

# DESIGNING & BUILDING



## PLAN YOUR PROTOTYPE (THE REPRESENTATION OF YOUR INVENTION)

What parts, materials, and/or tools will you need to make the prototype and how much will they cost?

Where will you get those parts and materials?

What additional skills or abilities will you need to make the prototype? How will you gain those skills?

Who might help you build your prototype?

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# BUILDING & TESTING

## BUILD YOUR PROTOTYPE

- Get the parts and materials and build the invention (document with photographs, if desired).
- If your prototype is not a working model, you'll need to clearly explain how it would work.
- If it can be operational, it should be.

Test and evaluate the invention. What did you do to test the invention? (You can do interviews and surveys and other evaluations if you have a non-working prototype.)

Identify any problems with the invention.

What did you learn? What will you change to make it better?

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Continue to build, improve, and test until your invention works as planned. Copy this page as often as you need for documenting each test. (or use blank pages. Remember to add the dates!)

**Hint:** Number and date each test as you document your progress. Take pictures of your progress and use some in your final presentation.

# COMMUNICATING

## MARKETING YOUR INVENTION

**NAMING** your invention is important!

Here are some creative attention-getting techniques you can use to come up with different names:

- Alliteration (using the same first letters or sounds): **“Kit Kat”**
- Rhyming: **“Light Bright”**
- Alternative spelling: **“Sno Bal”**
- Using numbers in the name: **“Super Clean 3000”**
- Including the function of the invention: **“Hydro-Blast”**

First, make a list of all the words that **describe** your invention:

Then add words to your list that may describe the emotion or feeling of your invention.

**Example:** Safe, Soft, Energy, Silly, etc

Other things to consider when naming your invention:

- What is the function of your invention?
- Is it serious? Is it humorous? Is it for adults or kids?
- Make sure the words you use are appropriate for the person who will be buying it and/or using it.
- **Hint:** Try combining some of the above techniques. Use extra paper and don't forget to add the dates!

# COMMUNICATING

## MARKETING YOUR INVENTION

Here are other things to think about before picking a final name:

You can use these thoughts when you begin thinking about your presentation too!

- Think in terms of marketing your invention. How has your invention solved the problem? How will it help others?
- Who is your target audience (Who would use your invention)?
- Who else might use it that you didn't even plan for?
- Based on this analysis, what are some **MORE** names for your invention?

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**My invention's final name is:**

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**I picked it because:**



## YOUR DISPLAY BOARD

Your display board (or poster, depending on requirements) is an important part of your process! It's the first thing that a Judge or other viewers see and it helps to visually explain your invention and your creative process!

Use a tri-fold display board and your invention will go in front of it (on the table or on the floor). Tape the **Student Registration Form** (for WNYIC, if live only) to the back of your display board (this form is found at <https://wnykidsinvent.org/resources/>).

### Make sure to label:

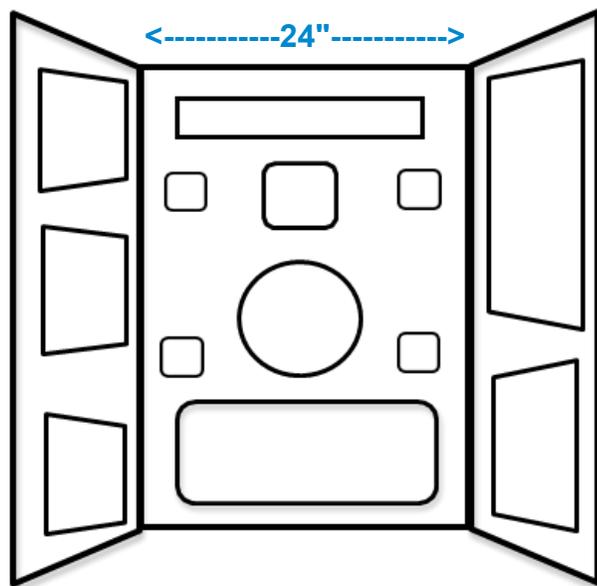
- The **PROBLEM**
- The **PROCESS**
- The **SOLUTION**

### Make sure you use:

- Lettering that is readable (style, size, color)
- Colors that look good together
- Correct grammar, spelling, and punctuation

### Things you might include on your display:

- Images showing you building or testing your invention
- How the invention was made
- How the invention is used
- **SIMPLE AND PRECISE** text to support and explain any pictures, drawings, charts, etc.
- Any scientific principles that were used (e.g. buoyancy, heat transfer)
- Any engineering disciplines that were used (e.g. electronics, optics)
- Testimonials from users, research results
- Any other information about the invention that helps explain it, what it does, or why it is good



# STATEMENT OF ORIGINALITY



**I Promise that the ideas in this Invention Log are my own**

**Inventor Name:**

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**Inventor Signature:**

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**2nd Inventor Name (if applicable):**

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**2nd Inventor Signature (if applicable):**

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**Grade:**

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**School:**

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**Teacher/Advisor:**

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**Date:**

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