

INDEPENDENT INVENTOR ACTIVITY 1: THE INVENTION PROCESS

Base Time: 20 minutes



TODAY I WILL ...

How do inventors come up with ideas of what to invent? How do they create their inventions? All inventors follow steps called the Invention Process. This process will guide you in creating your own design, from identifying a problem, ideating a solution, and designing a prototype (model) of your idea. Today, you will learn the steps of the Invention Process and be able to explain them. Then, you will practice this process as you build a paper airplane to meet specific requirements.

I WILL NEED...

Materials I Need

- [YIP Inventors' Journal](#)
- Video: The Henry Ford's Innovation Nation: Soccer Ball That Generates Energy
VIDEO LINK: <https://www.youtube.com/watch?v=0gifXci-FUk>
- At least two types of paper for aircraft (such as printer, notebook or construction paper)
- Paperclips representing passengers (for added challenge)
- Tape
- Measuring tape (optional, for measuring flying distance)

GOOD THINGS TO KNOW BEFORE I BEGIN...

During your invention journey with YIP, you will design and create your own original invention. YIP's activities will guide you through the process with ideas and prompts to help you become an inventor. All the activities are optional, but all are intentionally included to give you the tools and support you need to be successful.

YIP provides a [YIP Inventor's Journal](#) which you can download and print (or order from the YIP website) to be used as you complete the YIP Independent Inventor Activities. These journals will allow you to record your invention process- your ideas, research, drawings, and other activities you do as you invent. All inventors keep a logbook of some kind to document their work so that they can write about what they are doing, and more importantly, they can prove that the original invention idea is their own! The Inventor's Journal includes worksheets and other pages that will guide you through your invention process. It's like a diary and should be used as you complete your activities. You do not need to complete every page of the journal but use the ones that will be most helpful. You will see the journal listed in the "I Will Need" section of every YIP activity, so try to keep it with you whenever you are working on your invention. You are welcome to write notes on other paper and insert it into the journal later.

NOTE: If you are interested in participating in an invention fair, a journal or logbook is required for competition at the Independent Student Invention Fair, the Northern New England Invention Convention, the Vermont Invention Fair and the Invention Convention US Nationals.

INVENTION ACTIVITY

“What is an invention? What makes something an invention?”

Invention = is a new device or process that originates after study and experiments

Innovation= is when you take an existing concept, object, or invention and using creativity improve on it by adding something, creating another use for it etc.

What is it like to be an inventor? Almost all inventors follow a similar process as they develop their new inventions. This is called the **Invention Process**. The invention process has 7 steps and almost all these steps are needed to turn an invention into a real product that people use. *(This process is included in the YIP Inventor’s Journal to help you remember.)*

THE INVENTION PROCESS

- **Identify**- What is the problem and what is challenging? Why?
- **Understand**- Figure out why this is a problem. Who is affected by this problem? Are there any solutions? If yes, can they be better? If no, could there be a solution?
- **Ideate**- Brainstorm; use creative thinking to turn an idea into a solution. How can you solve the problem or make it easier?
- **Design**- Sketch a drawing of the solution. Label the parts and features and how they will work. This design becomes the recipe for your prototype.
- **Build**- Put your plans into action and build a model (prototype) based on your design.
- **Test & Refine**- Test the prototype to see if it works and how it can be improved. Get others to try it and give you data and feedback (suggestions). Use this testing data and feedback to make modifications to improve the design and prototype. Draw new designs and label the changes. You can continue to Test-Refine many times to make your invention the best it can be.
- **Communicate**- Tell others about your new invention idea and how it solves your problem.

Watch this video about a young inventor who developed a cool device- a soccer ball that generates energy. Look for the steps of the invention process and how this inventor approached them.

VIDEO LINK: <https://www.youtube.com/watch?v=0gifXci-FUk>

Activity: Paper Airplane Blast Off

Now it’s time to practice the Invention Process on your own.

CHALLENGE: Build a paper airplane using only the materials listed (various kinds of paper and tape). Your plane must fly at least 8 feet.

Before you begin, take some time to think about what will make a successful airplane. Then design your plane. When ready, test the plane. Does it fly at least 8 feet? Why or why not? What can you change to make your plan fly farther? Try it.

For more challenge, add “passengers” to your paper airplane. Using the paperclips, see if your plane can fly 8 feet with 3 passengers (3 paperclips attached to it). Does it go the distance? If no, what changes can

you make? Try again. And if it is successful, what happens if you add more passengers? What changes can you make to design a plane that can hold more passengers and still fly 8 feet or more?

When you finish the activity, think about how you used the Invention Process. Which steps were easy? Which ones were more difficult for you? Why? Show your aircraft to someone at home and explain how you made changes to improve the original design. Talk about any roadblocks you had and what you might do differently if you did this activity again.