



# Inventing

Scouts BSA · STEM

Name

Started

Completed

Inventing is about spotting problems and creating new solutions. You'll learn from real inventors, think about how ideas are protected, and design and build a prototype of your own. It's a great badge for curious minds and tinkerers.

## Requirements

Every official requirement, in plain language. Check the official wording when you sign off ([scouting.org/merit-badges/inventing/](https://scouting.org/merit-badges/inventing/)). Tips and examples are ideas, not extra requirements.

☐ **1** Define inventing in your own words, then do 1a and 1b

**Tip:** Make a list of inventions you use every day and pick a few that made life better for many people.

**Example:** Pick three inventions that changed lives and explain who they helped: the light bulb lets people work and study after dark, the refrigerator keeps food safe, and the smoke detector saves people in house fires.

☐ **1a** Explain to your counselor how inventors and their inventions have helped the U.S. economy grow

☐ **1b** List 3 inventions and say how each has helped people

## 2 Learn from inventors: Choose 1 of 2

**Tips for this section:** Look for a local inventor through a maker space or college, or read about three inventors at the library.

**Example for this section:** Read about three inventors with very different stories, like one who worked in a big lab, one who invented as a teenager, and one who turned a hobby into a product. Note what problem each solved and how many tries it took.

- ☐ **2a** With a parent's or guardian's permission and your counselor's approval, interview an adult who invented a useful item or process, and report to your counselor what you learned

- ☐ **2b** Read about 3 inventors, choose the most interesting one, and share with your counselor what you learned

## 3 Intellectual property and patents

**Tips for this section:** Learn the difference between patents, trademarks, and copyrights, and why inventors protect their ideas.

- ☐ **3a** Define intellectual property. Explain which government agencies protect it, what kinds can be protected, how they're protected, and why protection is needed

- ☐ **3b** Explain the parts of a patent and the different kinds of patents

- ☐ **3c** Find a patent number on camping gear you've used. With a parent's or guardian's permission, look up the patent online, compare the item to the patent's claims and drawings, and report to your counselor

- ☐ **3d** Explain to your counselor what patent infringement means

- ☐ **4** Discuss with your counselor which kinds of inventions are fine to share with others and why. Tell about one invention that was never patented and how it has affected society

**Tip:** Talk about when it makes sense to share an idea freely and when to protect it.

**Example:** Think it through with a scenario: you invent a better tent stake. If you share it freely, everyone benefits but you can't sell it. If you patent it, you can sell it but it costs money and time. Discuss when each choice makes sense.

- ☐ **5** Pick a store-bought product you've used on an overnight troop campout. Suggest ways to improve it, sketch your ideas, and discuss them with your counselor

**Tip:** Think about camping gear that frustrates you, like a hard-to-pack tent, and suggest how to make it better.

**Example:** Pick a camp chair that tips over in sand. Recommend wider feet that snap on, a lighter frame, and a pocket for a water bottle. Sketch your idea and explain who it helps and what it might cost.

- ☐ **6** Come up with an invention that would fix a problem for your troop, family, community, chartered organization, or a special-interest group. Keep a notebook of your progress as you do 6a–6c

**Tip:** Sketch your idea from different angles, then build a simple model from cardboard or craft supplies.

**Example:** Design a cable organizer for your backpack. Sketch it from the front, side, and top, label the materials, and build a model from cardboard and rubber bands to see if the size feels right.

- ☐ **6a** Talk with people who might use your invention to learn their needs. Then write a description of the invention and the problem it solves, with a detailed sketch

- ☐ **6b** Make a model of the invention from clay, cardboard, or other handy materials, and list the materials you'd need for a working prototype

- ☐ **6c** Show your idea and model to your counselor and possible users, and write their feedback in your notebook

- ☐ **7** After your counselor approves the plans you've shared, build a working prototype of your requirement 6 invention. Test and evaluate it, considering cost, usefulness, marketability, looks, and function. Describe how it compares to what you first imagined, and have your counselor critique it

**Tip:** Build a working version and test it several times. Write down what goes wrong and keep improving it.

**Example:** Build your working prototype, then test it at least three times. Keep a log: "Test 1: clip broke. Changed to a thicker plastic. Test 2: held, but slipped. Added a rubber grip. Test 3: worked."

## **8 Inventing in action: Choose 1 of 2**

**Tips for this section:** Look for a robotics team, invention club, or science museum that features inventors.

- ☐ **8a** Take part in a club or team that builds something useful, such as a robotics team or a science or engineering club, and share the experience with your counselor

- ☐ **8b** Visit a museum or exhibit about an inventor or invention, and make a presentation about your visit for your troop, patrol, or a similar group

- ☐ **9** Discuss with your counselor the range of skills, education, training, and experience inventors need, how you can build your creativity to solve problems at home, school, and in your community, and 3 career fields that use an inventor's skills

**Tip:** Think about skills like creativity, persistence, and teamwork, and which ones you want to grow.