



Simple Machines

Do you like to make your own creations? Or find out how things work? There are six simple machines, and they are the foundation of so many things in our world. As you earn this patch, you'll learn about them, make some of your own, and discover how they improve our lives!

Do you want to know the coolest thing about simple machines? Simple machines make our lives SIMPLER!

How to earn the Simple Machines patch the Girl Scout way:

Steps:

1. **Discover**—What are the six simple machines?
2. **Connect**—Make examples of your own from things around your house.
3. **Take Action**—Put simple machines into action to improve the world around you!

Materials Needed:

In order to complete this patch, you'll need:

- Resources about mechanical physics (You can either go online with an adult, ask a professional, or visit your public library.) Some suggestions:
 - ★ *You Wouldn't Want to Live Without Simple Machines* by Anne Rooney
 - ★ *The Kids' Book of Simple Machines* by Kelly Doudna
 - ★ PBS Learning website
 - ★ EXPLAINTHATSTUFF! website
- Gather various items to build examples of the six simple machines. Consider items from the recycle bin, toys, general items you use every day, or even things you find in your attic/basement/garage. Just be sure you get permission from an adult! (These will be used in Step 2: Connect.)

STEP 1 Discover the six simple machines and how they work.

The 6 simple machines are:

- lever
- pulley
- inclined plane
- wedge
- screw
- wheel and axle

What examples of each can you find in your daily life? How do each of the simple machines make an activity easier? Investigate mechanical physics, a branch of physics that studies motion and force, to learn more!

STEP 2 Make your own examples of the six machines.

- Can you make a lever with items found in nature or an inclined plane with items from the recycle bin?
- How many "screw" type machines can you find in your kitchen?
- What items in your house could you use to make a wheel and axle?
- How small or how big of a simple machine can you build?

STEP 2 continued ...

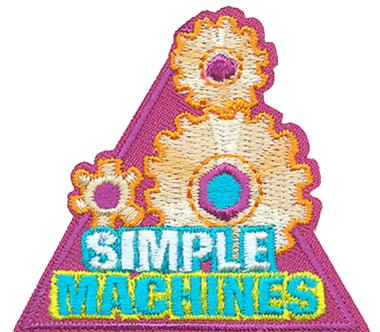
Feel free to get creative and think out of the box! You likely have a few things around the house that will help you make all your machines. An empty cereal box? A ruler? String? Buttons? Toothpicks? Try as many different items to make different versions of the six machines!

These are just beginning ideas, let your imagination “see” simple machine parts all around you!

STEP 3 Put simple machines into action to improve the world around you!

Put your skills and these awesome machines to work helping you, your family, or your community! Here are some suggestions, but feel free to Take Action in a way that inspires you most!

- Could someone in your home benefit from a simple machine?
- Can you create a machine to simplify a task?
- Is there some way that you can bring awareness to the importance of simple machines by teaching or creating educational materials about them?
- Simple machines don't just make things simpler. For some people they make things possible! Think of wheelchair ramps, what kind of simple machine is that? It is so important to ensure everyone can access buildings, transportation, and even events! Find out more about accessibility and how we can improve options for everyone. Do you know of places in your community that would benefit from a wheelchair ramp?
- Find out about people who are creating and implementing simple machines to improve our world and find ways to support them.



All done?

CONGRATULATIONS! You've completed all the necessary steps to earn the Simple Machines patch.

After completing the activities from each step, visit or call a Girl Scouts Western Pennsylvania retail shop at **800-248-3355** to purchase your patch.* A patch may be worn on the back of a vest, sash or tunic.

**Patch shown may be substituted with similar patch, based on availability.*