



# Short and Snappy

Learning Opportunity for Volunteers

## Engaging Girls in STEAM

15 minutes

Girls push boundaries, test limits and look at the world around them with inquisitive eyes. They're natural scientists! Girl Scouts introduces girls of every age to science, technology, engineering, arts and math (STEAM) experiences relevant to everyday life. Whether they're discovering how a car's engine runs, learning to manage finances, or exploring careers in STEAM fields, girls are fast-forwarding into the future.

### STEAM and the national program

Every girl needs a chance to explore the fascinating world of STEAM. Girl Scouts encourages girls of all ages by offering "fun with purpose" through its K-12 national program.

Here's how Girl Scout Leadership Experience processes provide quality STEAM experiences for girls:

**Girl-led:** Even when a girl has an interest in STEAM, she might find that boys take the lead in a school environment due to unspoken assumptions about gender roles. Girl Scouts offers a safe, supportive place for girls to seek challenges. The girl-led process encourages girls to decide which topics they want to explore and how they want to go about it.

**Learning by doing:** Research shows that, particularly with STEAM, youth need to be hands-on, active learners. In addition, Girl Scouts' learning-by-doing process involves a reflection step that asks girls to think about how a given activity worked and what they would do differently in the future – a key skill in scientific testing and conducting experiments.

**Cooperative learning:** In general, girls prefer a collaborative leadership style, rather than the traditional, top-down, "command and control" approach. The cooperative learning process gives girls the opportunity to develop leadership and STEAM skills in a way that should feel comfortable.

### What is a Short and Snappy?

- These short trainings can be provided at a service unit meeting or reviewed individually.
- Any interested volunteer may lead a Short and Snappy.
- Short and Snappys are usually 10-45 minutes in length.

### What you'll need

- Short and Snappy outline
- Engaging Girls in STEAM handout

### Things to remember

- Stay within the allotted time.
- If you don't know the answer, seek the correct answer from the appropriate support person.

### Questions? Comments?

Contact [training@sdgirlscouts.org](mailto:training@sdgirlscouts.org)

[www.sdgirlscouts.org](http://www.sdgirlscouts.org)

## STEAM badges

### Activity:

1. Look at the list of STEAM badges below.
2. Go to Girl Scouts Badge Explorer at [forgirls.girlscouts.org/home/badgeexplorer](http://forgirls.girlscouts.org/home/badgeexplorer) and explore the STEAM badges in your troop's age level.
3. Pair up with other troop leaders in your age level and talk about ideas for completing the badges.
4. Extra credit: Find a community partner that offers a STEAM badge workshop.

The **Naturalist** badges invite girls to explore the outdoors. As girls learn to love nature, they're inspired to protect the environment.

Bugs (Brownie) ● Flowers (Junior) ● Trees (Cadette) ● Sky (Senior) ● Water (Ambassador)

The **Animal** badges connect girls with animals.

Pets (Brownie) ● Animal Habitats (Junior) ● Animal Helpers (Cadette) ● Voices for Animals (Senior)

The **Digital Art** badges help girls build valuable technology skills.

Computer Expert (Brownie) ● Digital Photographer (Junior) ● Digital Movie Maker (Cadette) ● Website Designer (Senior)

The **Science and Technology** badges connect girls to science topics they love from the development of video games to the physics of roller coasters to the technology used to create new fabrics.

Home Scientist (Brownie) ● Entertainment Technology (Junior) ● Science of Happiness (Cadette) ● Science of Style (Senior)

**Innovation** badges get girls to solve problems using methods from many fields, such as anthropology, engineering, graphic design and business.

Inventor (Brownie) ● Product Designer (Junior) ● Entrepreneur (Cadette) ● Social Innovator (Senior)

**Financial Literacy** badges prepare girls for a sound financial future. Girls learn how to save, spend and give to others. A sample of the badges girls can earn are:

Money Manager (Brownie) ● Philanthropist (Brownie) ● Financing My Future (Senior) ● Good Credit (Ambassador)

### STEAM Journey series: It's Your Planet – Love It!

- *Between Earth and Sky*: **Daisies** explore the world of nature.
- *WOW! Wonders of Water*: **Brownies** learn about the water cycle.
- *GET MOVING!*: **Juniors** complete energy audits in buildings.
- *Breathe!*: **Cadettes** assess air quality.
- *Sow What?!*: **Seniors** calculate their “food print” and learn kitchen science while preparing a locavore meal.
- *Justice*: **Ambassadors** “do the math” to figure out how much trash is created and how to reduce it.

## **STEAM resources:**

- GSSD Pinterest: [pinterest.com/sdgirlscouts/stem/](https://pinterest.com/sdgirlscouts/stem/)
- GSSD community partners: [sdgirlscouts.org/en/about-girl-scouts/our-program/ways-to-participate/community-partners.html](https://sdgirlscouts.org/en/about-girl-scouts/our-program/ways-to-participate/community-partners.html)
- GSUSA science partners: [girlscouts.org/program/basics/science/partners.asp](https://girlscouts.org/program/basics/science/partners.asp)
- GSSD Resource Center: Email Myla Coleman, [mcoleman@sdgirlscouts.org](mailto:mcoleman@sdgirlscouts.org)

## **Activity ideas**

- Visit Reuben H. Fleet Center Museum in Balboa Park: [rhfleet.org](https://rhfleet.org)
- STEM Activities for K-12: [pbs.org/teachers/stem](https://pbs.org/teachers/stem)
- Canteen Girl: [canteengirl.org](https://canteengirl.org)
- Tynker: <https://www.tynker.com>
- iExploreSTEM: [explorestem.org/engineering-activities](https://explorestem.org/engineering-activities)
- Girls Learning Environment and Energy: <https://sites.stanford.edu/glee>

## **Generation STEM** findings (Girl Scout Research Institute)

- Seventy-four percent of high school girls across the country are interested in the fields and subjects of science, technology, engineering and math (STEM).
- Girls are interested in the process of learning, asking questions and problem solving.
- Girls want to help people and make a difference in the world.
- Girls who are interested in STEM are high achievers who have supportive adult networks and are exposed to STEM fields.
- Girls who are interested in STEM fields are actually interested in many subjects and career opportunities — STEM is just one area of interest among many.
- Perceived gender barriers are still high for girls and may help explain why STEM fields aren't their top career choices.
- African American and Hispanic girls have high interest in STEM, high confidence, and a strong work ethic, but have fewer supports, less exposure and lower academic achievement than Caucasian girls.

## How to Make Borax Crystal Decorations



### **Activity: Make a Borax crystal decoration**

#### **What is Borax?**

It's a common household chemical or substance. Find a box of Borax in your local grocery store's cleaning aisle. It's most commonly used as a laundry booster or household cleaner.

#### **What happens when you combine boiling water and Borax?**

When mixed together and left overnight, or for a number of hours as the water cools, Borax and water create crystals.

#### **How do Borax and water create crystals?**

Borax's natural form is actually a crystal, and it dissolves in boiling water. Hot water can hold more borax than cold water, so the hot water becomes saturated with Borax. So when the water cools, the Borax returns to its natural state, leaving large crystal shapes.

You will need:

- Borax
- Empty mason jar
- Boiling water
- Pipe cleaners and popsicle sticks
- String, yarn or ribbon
- Food coloring (optional)

Make a shape with the pipe cleaner. With the string, hang the pipe cleaner from the popsicle stick, laid across the mason jar. Mix together the borax and boiling water until the borax is completely dissolved. Don't forget to add food coloring! Then pour the water in the mason jar. Repeat the recipe as many times as needed. Let your mason jar sit for about 20 hours.