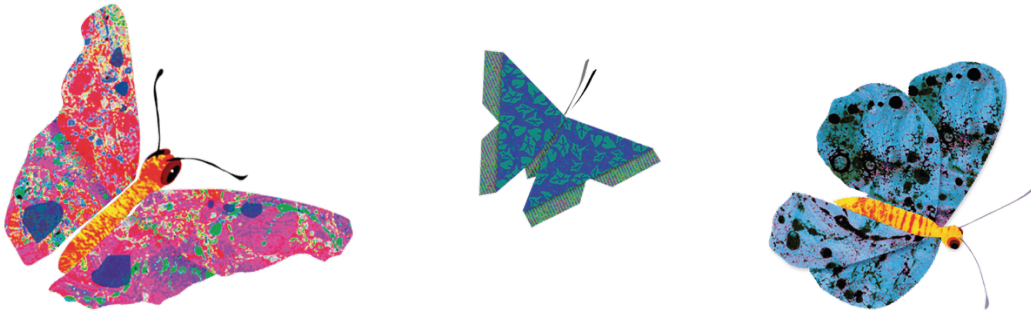


# Girl Scout Juniors

## Think Like a Citizen Scientist Leadership Journey



### Help wild animals. Count butterflies. Map a stream.

These are only a few of the big challenges that scientists want to solve—but they need huge amounts of data to conduct their research. That’s where you come in!

Citizen scientists are people who are curious about the world and want to make a difference. They volunteer to collect data and send it to scientists. As a citizen scientist, you may be asked to take photos of clouds or streams, use your smartphone to monitor water and air quality, count the butterflies in your backyard, play games to help with medical research, and much more. No matter what citizen science project you choose, you’ll make the world a better place.

### On this Journey, you’ll:

- Explore how scientists do research and create solutions to some of the most important problems faced by people, animals, and the environment.
- Practice making scientific observations and collecting data.
- Participate in a citizen science project.
- Do a Take Action project to address an issue in your community.

### You’ll earn two Girl Scout awards:

- Earn the Think Like a Citizen Scientist Award by completing Activities 1, 2, and 3.
- Earn the Take Action Award by completing a Take Action project. (Activity 4).

You’ll find Take Action tips and inspiring project examples in the **Junior Think Like a Citizen Scientist—Take Action Guide**.

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## Glossary

**Analyze**—to review data or information. The goal of analysis is to look for patterns that explain more about the research subject.

**Citizen science**—a way for everyday people (that is, they are not professional scientists) to collect information that helps scientists do research. With the help of citizen scientists around the world, scientists can do research more quickly and share information more readily.

**Data**—information that scientists receive, collect, or observe in the field.

**Observation**—watching and noticing something using all of your senses especially sight, to get information and better understand a situation or environment.

**Scientific method**—the steps scientists take to conduct scientific research.

**Sustainable solution**—a solution that lasts or continues.

## Materials List

### Activity 1: Explore Observation

- 10-15 small items from nature, such as leaves, twigs, flowers, rocks, etc. If you can't find enough objects of the same type, that's okay! You'll just have to describe the items you do have with even more detail.
- Towel, blanket, or similar item to cover the small items all at once
- Stopwatch, phone, or another timer
- Blank paper
- Notecards or blank paper cut into four pieces
- Pen or pencil
- A partner for the activity, like your sibling, parent, or family member

### Activity 2: Discover Data Collection and Analysis

- **Animal Tracks Cutouts**, five sheets printed and cut out (making 15 tracks in total)
- **Animal Tracking Graph**
- **Example: Animal Tracking Graph**
- **Animal Tracking Key**
- A small notebook to jot down notes. Alternatively, use blank paper and a stapler to create a small notebook.
- Decorating supplies such as construction paper, glue, animal stickers, decorative tape, stencils, etc.
- Pen, pencil, or marker
- Tape
- A partner for the activity, like your sibling, parent, or family member

### Activity 3: Participate in Citizen Science

- Digital device to access app or website (tablet, computer, or smartphone) to share data for the citizen science project
- Other materials for your citizen science project, found on your [SciStarter Dashboard](#) or in the project's instructions.
- A partner for the activity, like your sibling, parent, or family member (must be 13 or older)
- Field notebook from Activity 2
- Pen

### Prepare Ahead:

1. With your partner, create a Girl Scout account [here](#) on SciStarter.
2. As you sign up, you'll see a Welcome Video, materials list, an estimated amount of time, and instructions for each project option.
3. Choose a citizen science project to finishing signing up and start the Journey.

### Activity 4: Take Action with Citizen Science

- Junior Think Like a Citizen Scientist–Take Action Guide
- Pen
- Paper
- Any other materials for your Take Action project. For example, you may need a smartphone or camera if you're creating a video, a laptop if you're creating a PowerPoint presentation to deliver to your school board, city council, community partners, etc.

## Activity 1: Explore Observation

### Purpose

Sharpen your observation skills and explore how scientists use observation to learn about our world.

### Time Needed

30-40 minutes

### Materials

- 10-15 small items from nature, such as leaves, twigs, flowers, rocks, etc. If you can't find enough objects of the same type, that's okay! You'll just have to describe the items you do have with even more detail.
- Towel, blanket, or similar item to cover the small items all at once
- Stopwatch, phone, or another timer
- Blank paper
- Notecards or blank paper cut into four pieces
- Pen or pencil
- A partner for the activity, like your sibling, parent, or family member

### Background

Scientists study nature to better understand how it works. They use what they learn to create solutions that help people, animals, and the environment. Scientists use a process called the scientific method to conduct research, solve problems, and learn new things.

One of the first steps of the scientific method is observation. Observation is watching and noticing something using all of your senses, especially sight. It's the start of every experiment and scientific discovery.

### Activity Instructions

To get started, gather the materials and find a sibling, parent, or family member to be your partner.

#### Part A: Practice observation with Kim's Tray.

Observation is an important step for scientists when they want to learn something. They look closely at all the details. Sometimes, scientists observe what they thought they would. Other times, they're surprised!

For the first part of the activity, play a game to sharpen your observation skills!

#### Steps

1. Ask your partner to hide all the small items under the towel.
2. Ask them to uncover them before you spend 30 seconds observing the items.
3. Have your partner cover the items again. How many items you can remember? Were you able to remember them all?

4. Brainstorm a few ways you could remember the items. For example, you could look at them longer or make a list.
5. Have your partner cover and uncover the items for you to observe again. However, this time, use your pencil and paper to make a list of the items you see.
6. After 30 seconds, have your partner cover the items. How many items you can remember? Were you able to remember more items than the first time?
7. Have your partner lift the towel [or blanket] just enough to add or remove one item without you seeing. Do you think you'll be able to notice when something changes?
8. Have them uncover the items again for 30 seconds for you to observe. Make sure to write a list to help you remember!
9. After 30 seconds, have your partner cover the items. How many items you can remember this time? What was different? What was new or missing?
10. Repeat the game a few more times, having your partner add and remove items.
11. After each round, see how many items you can remember! Are you able to remember them all? Are you able to notice what changes each time?

### **Part B: Describe your observations.**

Observation is an important part of being a scientist. A scientist looks closely and studies the details to learn about our world. They also think about what their observations might mean. They pay super close attention to what's happening around them, both looking and thinking about what they're observing.

For the next part of the activity, it's time to test your observation skills!

#### **Steps**

1. Take a look at all the small items you have from nature and choose two items. If you were to describe one of the items to your partner, what would you say about it? What would you say about the other item? How would you describe the differences between the two?
2. Choose one item to describe to your partner, but don't tell them which one! Make sure not to point to the item either.
3. Write down everything you want to communicate about your item on a notecard (or piece of paper). Remember, some of the items are very similar, so it's important to write as many details as you can to help your partner guess which item you chose!
4. When you think your description is ready, give it to your partner and see if they can guess which item you're describing.
5. If they guess incorrectly, go back and review your description, adding new details to help your partner guess the correct item.
6. After your partner correctly guesses the item, choose a new item and play again!

## Part C: Make scientific observations.

The things a scientist can observe are endless! Scientists make many different types of observations. They note how many things there are and details about each of the things. For example, how many people are in the space around you? That's a scientific observation!

However, not every observation is scientific. For example, imagine someone is describing a cat. They say to you, "The cat is black." They also say, "The cat looks scary." Which observation is scientific?

"The cat is black" is a scientific observation because it gives information about the cat. It doesn't include any personal feelings or opinions. "The cat looks scary" is giving an opinion. Scientific observations can't include personal feelings or opinions, so "The cat looks scary" is not a scientific observation.

### Steps

1. Pretend you're a scientist observing the space around you. What are some observations you have? Is the space big or small? If you're in a room, what color are the walls? What furniture is there? Write down your observations on a sheet of paper.
2. Look at your list of observations. Were they scientific? Did they include any of your personal feelings or opinions?
3. Choose one thing, like a plant or a chair, in your room.
4. Write down lots of observations about the thing and the other objects around it. Remember, great observations include lots of details! Make sure to make only scientific observations about the object.
5. After a couple minutes, move on to observe something else! This time, look at the object from different angles. Go close and look for the tiny details.
6. Step back and think about how the object you're observing fits into everything around it; this will help you learn something new!

## Activity 2: Discover Data Collection and Analysis

### Purpose

Take field notes about animal tracks to learn about collecting and analyzing data over time.

### Time Needed

40-45 minutes

### Materials

- **Animal Tracks Cutouts**, five sheets printed and cut out (making 15 tracks in total)
- **Animal Tracking Graph**
- **Example: Animal Tracking Graph**
- **Animal Tracking Key**
- A small notebook to jot down notes. Alternatively, use blank paper and a stapler to create a small notebook.
- Decorating supplies such as construction paper, glue, animal stickers, decorative tape, stencils, etc.
- Pen, pencil, or marker
- Tape
- A partner for the activity, like your sibling, parent, or family member

### Background

Observations are a type of data. Data simply means information. Data can be notes, drawings, photos, recordings or videos of what you see and hear. It can also be information about where you are—how hot or cold it is, what the weather is like, and your location.

### Activity Instructions

To get started, gather the materials and find an older sibling, parent, or family member to be your partner.

#### Part A: Have your partner setup the activity.

Before you start the activity, ask your partner to tape the **Animal Tracks Cutouts** in different places around the room.

As your partner sets up the room, make sure not to watch! You may want to close your eyes or leave the room.

Here are some tips for your partner:

- Grouping similar tracks near one another can help with the analysis portions of the activity (Parts D & F). For example, you might place 3 bear tracks around a chair. Then, your Junior could reason out and conclude that there was something, like food, that made bears travel past the chair during that Observation Session.
- You don't need to put all tracks out at once. As there are multiple observation sessions, you'll be changing the location and number of tracks throughout the activity.

- You can choose for there to place 0 tracks for an animal for each Observation Session (meaning there are none of the animal in the area that round).
- As your Junior graphs her data after each Observation Session, reposition the tracks around the room for the next Observation Session, adding or subtracting some tracks for each type of animal.

### **Part B: Decorate your field notebook.**

Scientists need somewhere to store their observations, so they keep a field notebook. For example, a scientist will include the date and location. They may want to write down what the weather is like. They might want to make sketches of tracks or record measurements of soil temperature. They might also take photos or videos or record sounds as part of their field notes. All the observations and field notes are data scientists can use for their research.

Taking field notes about what you see is an important part of being a scientist. Just like a real scientist, you can use a field notebook to record your observations. You'll use your notebook for this activity and also use it to record data for your citizen science project (Activity 3).

#### **Steps**

1. If you don't have a notebook, create one by folding blank paper in half and stapling to make a small notebook.
2. Decorate your notebook.

### **Part C: Collect data for Observation Session 1.**

Observation is one of the first things scientists do to learn something new. When scientists come back from the field, they review their notes to make sure their data is detailed and matches what they observed. They also reflect on their data and add new notes about what it means. Scientists take what they learn from their observations to create solutions to problems and answer questions they have about nature.

For the next part of the activity, pretend you're helping a scientist learn more about animals that cross your area. The scientist has asked you, as a citizen scientist, to tell her about the animal tracks in the room, so she can know more about the animals' movements. This will be Observation Session 1.

#### **Steps**

1. Add today's date and your location to the top of your field notes.
2. Observe the tracks around the room, your "field," for 3 minutes. Write down notes in your field notebook about the tracks you see. For example, you might sketch or trace the animal tracks, count the number of tracks and record that information, or note where the tracks are located.
3. After 3 minutes, look at your field notes. What did you observe?
4. Take a minute to add any final details to your field notes. For example, is there anything you would add to your notes about the animal tracks? Are there any other observations you think you should add? What are some other things a scientist might want to write down? What other information would be useful to write down?
5. If you need to collect more data, go back into the field and observe the tracks again!



## Part D: Graph your data from Observation Session 1.

Scientists might look at research from other scientists to make sense of and better understand their data. They might also go back into the field to check their notes or observe their subjects multiple times to see how things change.

One way scientists could track the changes in animal tracks over time is with a graph. Not only can a graph capture what scientists see each time they go into the field, but it can easily show if there were any changes in data between the different sessions, too.

### Steps

1. Use your field notes from Part C and the **Animal Tracking Key** to identify what tracks belong to each animal you observed in Observation Session 1.
2. Count how many tracks you saw and how many you saw for each type of animal. How many bear tracks were there? How many bird tracks were there? How many deer tracks were there?
3. Go back into the “field” and collect all the animal tracks you observed.
4. Organize and count the number of tracks for each animal (bear, bird, and deer) to confirm if your observations were correct.
5. Read the Things to Know in the box below about the **Animal Tracking Graph**.
6. Use your field notes and the **Animal Tracking Graph** to graph the number of bear tracks you observed in Observation Session 1.
7. Repeat to graph the bird and deer tracks you observed in Observation Session 1 on the **Animal Tracking Graph**.

#### Things to Know about the Animal Tracking Graph:

- The bottom line of the graph is the observation session. For example, use the area above the "1" to graph the number of tracks you saw during Observation Session 1.
- The vertical line on the left is the number of tracks you observe each session.

**For example:** Imagine you saw 3 bear tracks. Go across to the "1" because it's the first observation session. Then move up 3 spots and draw a bear track. This shows that you saw 3 bears during Observation Session 1.

#### Important Notes to Your Partner:

- If your girl has questions, check out the **Example: Animal Tracking Graph** for a sample graph.
- As your girl graphs the animal tracks for Observation Session 1, reposition the tracks around the room for Observation Session 2, adding or subtracting some of each type. Remember, you can have 0 tracks for some animal each session!

## Part E: Collect data for Observation Sessions 2-4.

Scientists might observe their subjects several times to see how things change. For example, if you were to go back and look for animal tracks a week from now, the number of animal tracks would change as the animals move around, creating new tracks while old tracks are covered.

Now fast forward one week to see how the animals have moved! This will be Observation Session 2. Once you've graphed your data for Observation Session 2, go back into the field and collect data until you've collected and graphed data for 4 Observation Sessions.

### Steps

1. Go back into the "field" and take notes on what you observe.
2. When you come back, use your field notes to graph the number of each type of animal track on the **Animal Tracking Graph**.
3. As you graph your data, ask your partner to reposition the tracks around the room.
4. Repeat until you've observed and graphed data for 4 Observation Sessions in total.
5. Once you've graphed data for all 4 observation sessions on the **Animal Tracking Graph**, connect the tracks for each animal on the graph with a line. This way, you can easily see the change in the number of each animal between Observation Sessions.

**Note:** If you're running short on time, 3 observation sessions are enough to move on to Part F!

### Part F: Analyze your data.

After scientists review their data, they think about what it might mean. This is called **data analysis**. It is another step in the scientific method.

By graphing the animal tracks, you created a new way to present your data over time to others. You can also use your graph to help you analyze your data.

### Steps

Look at your **Animal Tracking Graph** and try to answer these questions:

- What are some things scientists could learn from your data?
- Are there any patterns in your data?

#### **For example: You might learn from your data that...**

The number of animal tracks changes over time as the animals move around. Sometimes, this means there aren't tracks from animals where there used to be tracks. For example, during some Observation Sessions there were bears, and other Observation Sessions there weren't any bears.

If scientists see a change like that, they might want to go back and to make more observations to help them answer why the number of animal tracks changed.

## Activity 3: Participate in Citizen Science

### Purpose

Collect data and send it to a scientist to help with their research!

### Time Needed

30-60 minutes depending on the citizen science project you choose

### Materials

- Digital device to access app or website (tablet, computer, or smartphone) to share data for the citizen science project
- Other materials for your citizen science project, found on your [SciStarter Dashboard](#) or in the project's instructions.
- A partner for the activity, like your sibling, parent, or family member (must be 13 or older)
- Field notebook from Activity 2
- Pen

### Prepare Ahead:

1. With your partner, create a Girl Scout account [here](#) on SciStarter.
2. As you sign up, you'll see a Welcome Video, materials list, an estimated amount of time, and instructions for each project option.
3. Choose a citizen science project to finishing signing up and start the Journey.

### Background

When scientists need a lot of data for their research, they ask volunteers to collect it. Citizen science could really be called “anyone and everyone” science. It’s a way for everyday people to help scientists advance research about people, animals, and the environment.

Citizen science brings together people of all different backgrounds to add to the world’s scientific knowledge. Scientists use data from citizen scientists, just like you, to find out new things about our world. Scientists use what they learn from the data to create solutions that help others, like helping people when they’re sick, keeping our communities safe from pollution, and many other things.

### Activity Instructions

Imagine a scientist wants to know more about butterflies. She wonders: Are they appearing in different areas of the country? Are there more butterflies now than there were ten years ago—or are there fewer? What’s causing the change in the number of butterflies?

She needs lots of data to answer that question. So she asks regular people to go outside, count the butterflies they see, and send her their data. When regular people help professional scientists with their research, that’s **citizen science**.

For the next activity, you’ll contribute to scientific research by becoming a citizen scientist. Choose a project that interests you or sounds like fun. For example, you can:

- Take photos of the sky and send them to NASA through the Globe Observer Project,
- Count and identify squirrels in your backyard or neighborhood with Project Squirrel,

- Observe pollinator plants and the bees and butterflies that visit them with The Great Sunflower Project,
- Share a photo of your local stream to help scientists track streams around the world with Stream Selfie,
- And so much more!

SciStarter has more than 6,000 citizen science projects. We've picked a few that can be done anywhere in the country at any time of the year. Of course, you can do any project that interests you!

### Steps

1. Find an older sibling, parent, or family member (age 13 or older) to be your partner. They'll upload your data for you.
2. Choose a citizen science project on SciStarter [here](#). Watch the videos, look at the time, materials, and instructions, and find the perfect project for you!
3. Watch the "Welcome" video from the scientists on your [SciStarter Dashboard](#).
4. Read the project's instructions on your [SciStarter Dashboard](#), gather any tools or materials, and get ready to collect data!
5. Collect data for your project by writing down any observations in your field notebook. Use the project materials and instructions, found on your [SciStarter Dashboard](#), to make sure you correctly collect all the data scientists have asked for.
6. Ask your partner to log your data through your [SciStarter Dashboard](#). **If you're under the age of 13, you cannot upload data on SciStarter, but your partner (over the age of 13) can do it for you!**
7. Watch the "Thank You" video for your citizen science project on your [SciStarter Dashboard](#).

### Want More Challenge? Try This!

**Analyze your data.** When the scientists analyze your data, they look at it along with the data from all the other citizen scientists. They look for patterns and clues in their data to answer any questions they have for their research.

#### Steps

Analyze your data by asking yourself the questions below:

- What could your data mean?
- What does it tell you about the subject?
- Do you notice any patterns?

Remember, depending on your data, you may not learn anything, and that's okay! You're still using the scientific method to learn something about your world, just like scientists.

## Activity 4: Take Action with Citizen Science

### Purpose

Use all you've learned to create a Take Action project that helps solve a problem in your community. Earn the Take Action award to complete the Journey!

### Time Needed

60+ minutes

### Materials

- **Junior Think Like a Citizen Scientist–Take Action Guide**
- Pen
- Paper
- Any other materials for your Take Action project. For example, you may need to bring: A smartphone or camera if you're creating a video, a laptop if you're making PowerPoint slides for a presentation to the school board or city council, etc.

### Background

When you collected data for a citizen science project, you helped make the world a better place. Not only did you help a scientist do research, but you've increased how much people know about the world.

For the next part of the Journey, you'll also make a difference for others with your Take Action project!

**You can do another citizen science project as part of your Take Action award if you either:**

1. **Connect the project to your community.** For example, if you do the Stream Selfie citizen science project, you may learn that streams in your area are polluted. Then you could create posters to share what you learned, bring awareness to the problem, and ask for change.
2. **Use what learned from your citizen science project to educate and inspire others.** For example, if you do the Stream Selfie project, you may decide to document what you did with photos and videos. Then you could create a presentation or video to tell others how fun and important citizen science is.

For more information and examples of Take Action projects, check out the **K-5 Think Like a Citizen Scientist–Take Action Guide**.

### Activity Instructions

#### Part A: Choose a problem for your Take Action project.

Scientists help sick people, take care of wild animals, keep rivers and oceans clean, and much, much more. To do these things, scientists spot problems that they want to research. Then they make lots of observations and analyze what they might mean. Scientists use all they learn to create solutions and cures to problems faced by humans, animals, and other parts of nature.

Just like scientists, when you do a Take Action project, you look for a problem in your community, and come up with a plan to fix it. Girl Scouts do Take Action projects to help make the world a better place.

### Steps

1. Create a list of problems or issues you want to help solve with a Take Action project. To brainstorm ideas, ask yourself questions like:
  - In the first part of the Journey, you made a lot of observations. Did you spot anything harmful or disrupting to nature? What did you observe?
  - What problems have you've observed in your community? This might be problems or issues you've seen, read about or heard about from others.
  - What's important to your community? What are their wants, needs, and concerns?

**Some Ideas to Get Started:** Protecting animals, preserving the environment, encouraging more people to enjoy the outdoors, advocating for a lower speed limit or needed streetlight in town, raising awareness about pollution, etc.

2. Narrow your list down to 4-5 options that interest you the most.
3. Choose 1 problem for your Take Action project. To help narrow down your choices, ask yourself, "Which of these problems...
  - ... seems the most important to my community?"
  - ... do I find most interesting?"
  - ... do I know the most about?"

### Part B: Design your Take Action project.

Your project must 1) be a **sustainable solution** and 2) use what you've learned throughout the Think Like a Citizen Scientist Journey.

As you plan your Take Action project, think about how a scientist would plan a project:

- First they would choose a subject or problem to research. You just did this when you chose one problem you want to help solve with your Take Action project.
- Scientists would then make lots of observations about the subject with lots of details. They'd make field notes, which become their data. Their data can be analyzed and shared.
- After they review their data, scientists try and use all they have learned to create a solution to their original problem.

Now you know what your project is, but you might not be quite sure how to make it happen. So it's time to think about all the little details and form a plan to Take Action! Remember to check out the check out the **Junior Think Like a Citizen Scientist–Take Action Guide** for more info and ideas.

### Steps

1. Brainstorm 3+ ways a Take Action project could address the problem you chose in Part A.  
For example: If you want to raise awareness about citizen science, you might organize a citizen science day at your school, ask your library to create toolboxes to help kids with citizen science, make a skit or video about citizen science, or create a pledge for others to promise to become citizen scientists.

2. Choose 1 idea for your Take Action project. To help narrow down your choices, ask yourself, “Which of these ideas...
- ... sounds like the most fun?”
  - ... would help me learn something new?”
  - ... will make me feel proud when I’m done?”
  - ... do I have the time, money, and materials to complete?”

If you’re divided between a few ideas, choose one top idea and keep the others as backups.

3. Create a plan for your Take Action project. For example, you may need a materials list, timeline, list of to-dos, or anything else that will help make your project a success. Make sure to include any ideas for people you’ll need help from or want to have involved.

To help you plan, ask yourself questions about your project similar to those found below!

**For example, if you want to complete another citizen science project...**

- What citizen science project will you do?
- How can you learn more about the new project? Is there anything you need to do to prepare?
- When will you complete the project?
- What materials will you need?
- Do you want to invite others to join in? If so, who? How will you invite them?

**If you want to make a video...**

- What do you want to say?
- Do you want to wear a costume?
- Do you want to use music?
- How will you film it? Who can help you film it?
- How will you show it to people—at a school assembly, at a family, or by having an adult post it (safely) online?

**If you want to create posters for your school...**

- Who can you ask for permission to put the posters on the walls?
- How should you ask for permission—if you want to make a presentation to the principal, what should you say?
- What materials will you need?
- Once you get permission, what do you want the posters to say?
- What will the poster look like? When will you hang up the posters?
- Do you want to get other students to get involved?

**No matter your Take Action project...**

- What do you need to make it a success?
- Is there anything you need to make in order to carry out your project?
- Is there someone you need to ask for help? How could you do that? What would you say?
- Are there any other materials you’ll need for your project?
- How can you get others involved?

## **Part C: Create your Take Action project.**

Every Girl Scout Take Action project changes the world a little bit and makes it a better place. Now use your plan to create your Take Action project!



It might take more time than you expected to complete your Take Action project, but that's all right! Take the time you need to create a lasting project that helps your community. You'll learn more about yourself and others if you have the time to create a project you care about, instead of rushing to finish.

## Steps

1. Follow your plan to Take Action. For example:
  - If you plan to make a presentation or video, you might need to write speeches or scripts, create PowerPoints, etc.
  - If you plan to organize an event, you might need to create an agenda, invite people, find a venue, etc.
  - If you plan to do another citizen science project, you might need to collect and record data. Remember, completing a citizen science project is not enough for the Take Action project, but you can use what you've learned from the citizen science project to Take Action—for example, you may want to make posters to raise awareness about a problem you found (like pollution in the stream) or tell others how to become citizen scientists.
2. Ask your partner (over 13) to share your Take Action project on your [SciStarter Dashboard](#):
  - What issue did you want to solve with your Take Action project?
  - What was your solution?
  - A project with a sustainable solution lasts longer than a one-time service project. How did you make your solution sustainable?
  - Add a picture of your Take Action project!
3. **Optional:** Once you've finished your project, share all you've done and learned with others. For example, you might:
  - **Organize a "Girl-Led Talk,"** where you give a speech about the Take Action project. You may also want to film your talks to share with others.
  - **Create a "Call to Action" event.** After presenting your project, invite others to get involved. Depending on the project, guests could sign a petition, contact government officials to share their views, donate supplies or time to keep the project going, etc.
  - **Launch a Take Action Pledge campaign,** asking others to share what they've learned about the issue and giving them a sticker or other item to remind them of their pledge.

To share your Take action project, you might want to answer questions like:

- What problem did you identify for the Take Action project?
- How did you use the scientific method to design your project?
- How does your project help your community?
- How is your Take Action project sustainable?
- How can others get involved to help solve the issue?



## Congratulations!

You've earned your Think Like a Citizen Scientist award, which means you learned how to solve problems like a scientist. You completed a citizen science project, where you collected and recorded data to help a real scientist to do their work!

You've also earned a Take Action award because you created a sustainable project to make the world a better place.

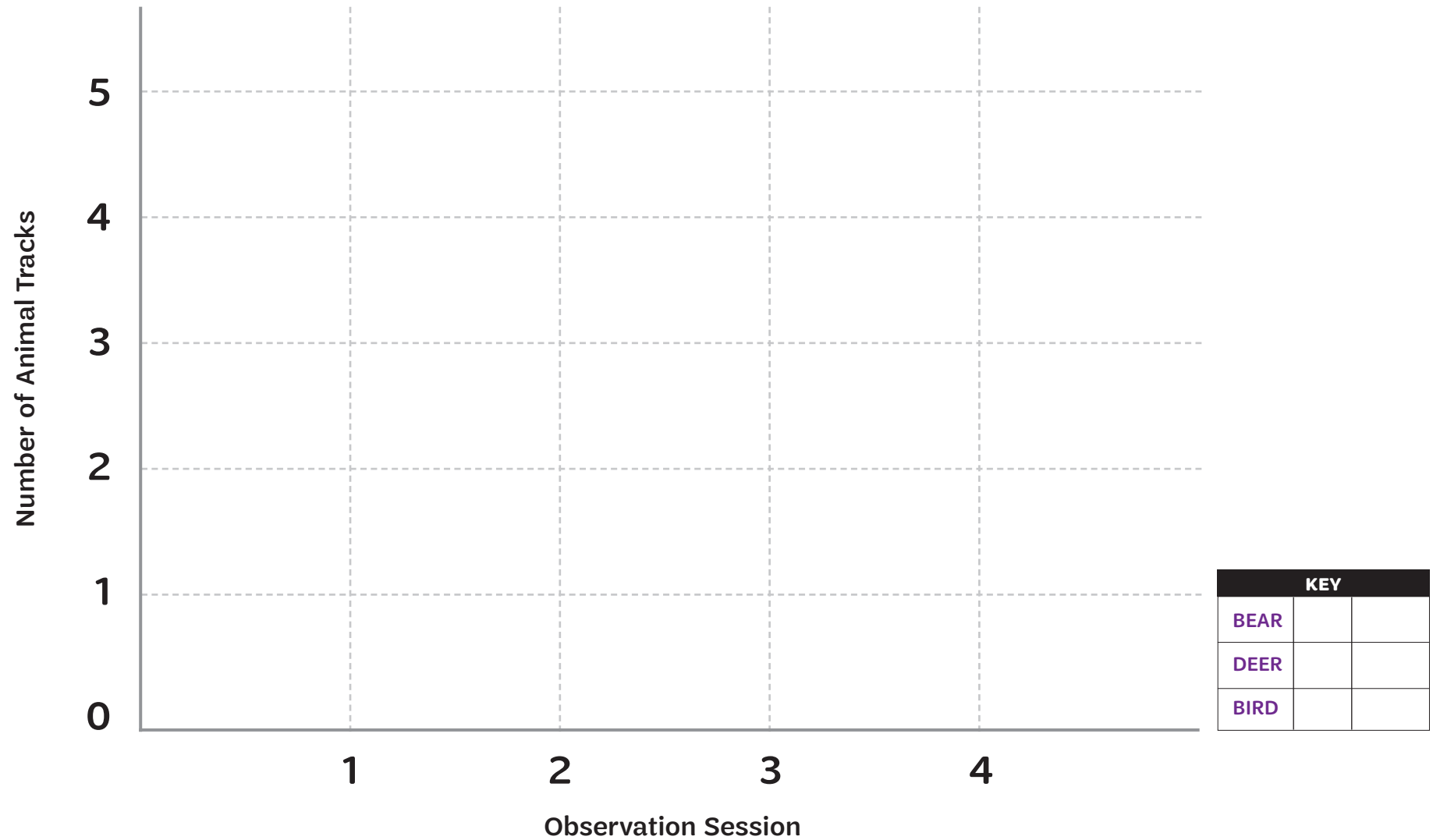
You can buy the awards from your council shop or the [Girl Scout Shop](#).

### Bronze Award Connection

Your Take Action project can help you build skills, such as public speaking, project management, and teamwork, that will help as you take on the Bronze Award. You may also be inspired to create a Bronze Award project that expands on your Take Action project and amplifies the impact. For more information, check out the **Junior Think Like a Citizen Scientist-Take Action Guide** and learn about the Bronze Award [here](#).

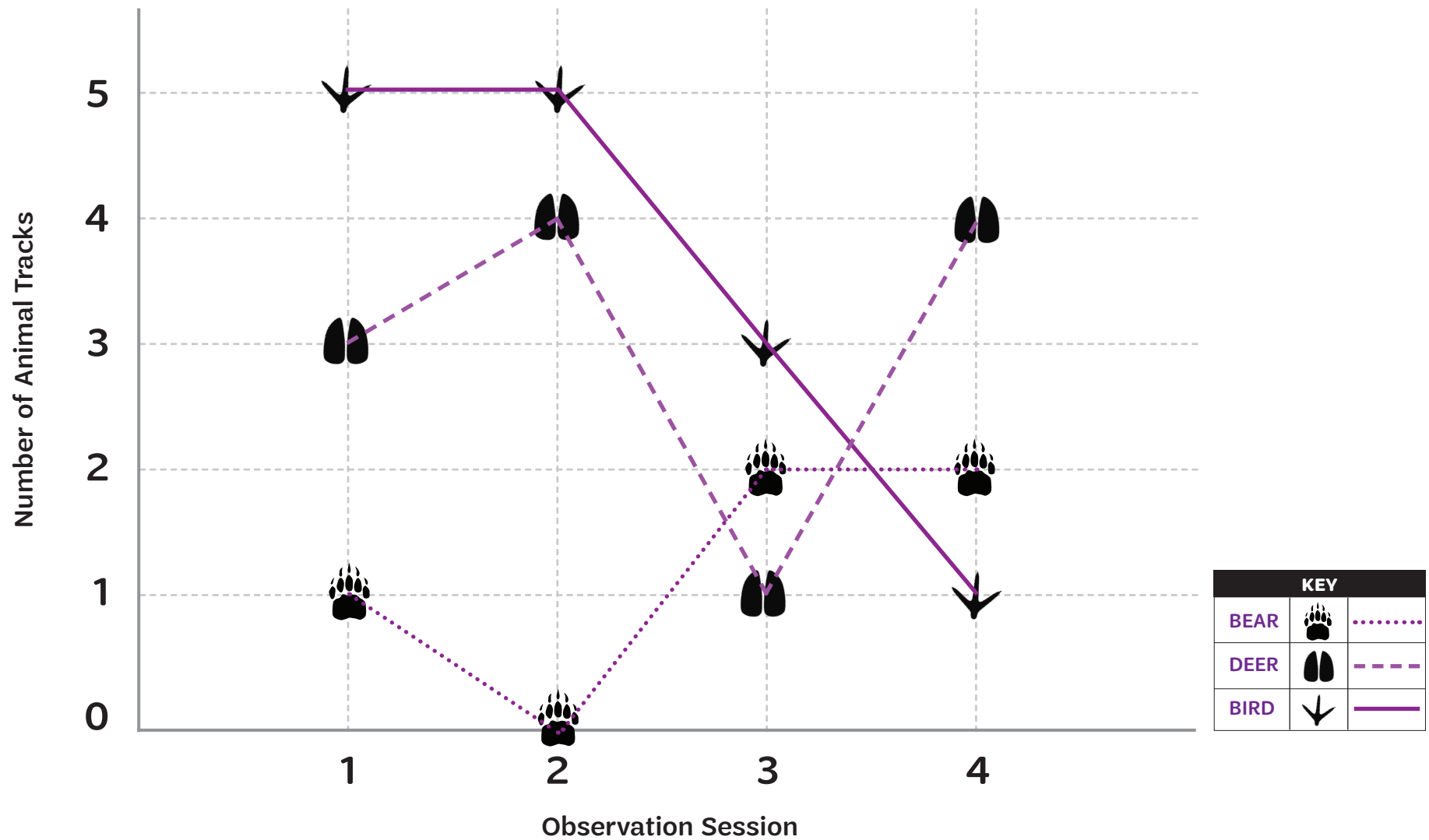


## Animal Tracking Graph



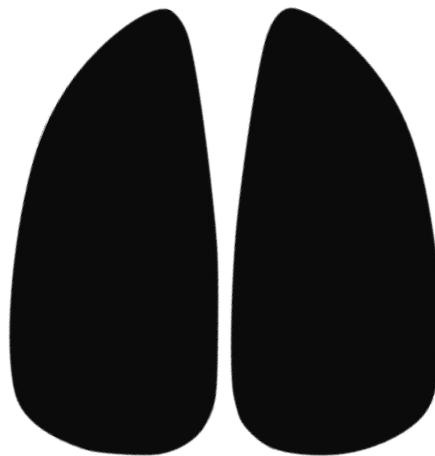
Name: \_\_\_\_\_

### Example: Animal Tracking Graph





**BEAR**



**DEER**



**BIRD**

## Think Like a Citizen Scientist Journey

# Take Action Guide

## What's the difference between a community service project and a Take Action project?

**Community Service** makes the world better by addressing a problem “right now.” For example, collecting cans of food for a food pantry feeds people “right now.” Gathering toys for a homeless family shelter makes kids happy “right now.” Providing clothing and toiletries to people after a fire or flood helps them “right now.” These acts of kindness are important ways to help people — right now.

**Take Action** encourages girls to develop a project that is sustainable. That means that the problem continues to be addressed, even after the project is over. Sustainability simply means coming up with a solution that lasts.

For example, girls might want to do something about trash in a local park. If they go to the park and pick up trash, they've solved the problem for today — but there will be more trash to pick up tomorrow.

### Instead, girls could explore why there's so much trash. Here's what they might discover:

1. There aren't enough trash cans in the park.
2. The trash cans are hard to find.
3. People have to walk out of their way to throw away trash because of where the cans are placed.
4. People don't realize the importance of putting trash in the trash cans.

### Here's how girls might address these issues:

- **Issues 1 – 3:** Make a presentation to the city council to report on their findings and suggest adding more trash cans or moving them to more visible or convenient positions.
- **Issue 4:** Create a public awareness campaign that encourages people to use the trash cans instead of littering.
- **Variation:** Older girls may want to design interactive garbage cans that make tossing your trash fun. Do an online search for “the fun theory” or “the world's deepest bin” to see this in action.

## What are the steps of a Take Action project?

Girls team up to:

- Identify a problem
- Come up with a sustainable solution
- Develop a team plan
- Put the plan into action
- Reflect on what they learned

**Keep It Girl-Led:** Girls should actively participate in each step in order for this to be girl-led. Younger girls will need more guidance, but they can and should decide as a team what problem they want to address.

## How do girls make their project sustainable?

Here are three ways to create sustainable change:

1. Make your solution permanent.
2. Educate and inspire others to be part of the change.
3. Change a rule, regulation or law.

## How can I help girls come up with Take Action Ideas?

Next are some specific examples you can use to help girls understand what sustainable Take Action projects look like.

**Keep It Girl-Led:** These examples are intended to give a sense of what a Take Action project could look like. **Please do not choose a project from this list for girls to do!** Instead, guide them to brainstorm ideas, get feedback, and come up with a plan. Girls will learn key leadership skills, such as decision-making, compromise, conflict resolution, and teamwork, when their Take Action project is girl-led.

## Citizen Science Take Action Ideas

**Issue:** More kids and families should know about how they can have fun (and help scientists) by doing citizen science projects.

- **Solution: Educate and inspire others.** Do a presentation at your school's parents' night about why citizen science is important. Showcase a few citizen science projects that are particularly fun and easy for families to do together.

**Issue:** More people need to know how they can do citizen science projects to help scientists learn about the world.

- **Solution: Educate and inspire others.** Organize a Citizen Science Day at your school or in your town. Set up Citizen Science Stations with handouts explaining different projects (and materials, if needed). Invite everyone to choose a project, collect data and upload it.

**Issue:** Perhaps you've done a citizen science project that's really sparked your interest. You've discovered that a river near your town is polluted. You've learned that bees are dying off and that our food supply is threatened. You've realized that monarch butterflies are in danger because the milkweed plant, their main source of food, is disappearing.

- **Solution 1: Educate and inspire others.** You create a video, presentation, skit, event, poster campaign, movie, etc. to tell people about the problem — and give them several ways they can take action to address it.
- **Solution 2: Change a rule, regulation or law.** You do some research and find out that changing a local law or regulation could address the problem. You make a presentation to your city council, start a petition drive, or advocate at the state level for a change in laws or regulations to address the problem.

**Issue:** More people need to know how exciting and fun STEM can be.

- **Solution 1: Educate and inspire others.** Create a list of great books, movies and documentaries that focus on STEM. Make copies for teachers to hand out or make posters for the school library.
- **Solution 2: Educate and inspire others.** Create a short play based on one of the books and perform it for your class or school.



## Other Ideas for Take Action

**Issue:** We could conserve water if more people collected rain water and used it to water plants.

- **Solution 1: Make it permanent.** Make rain collection devices for family or friends that can be installed in their yards. Give them a list of different ways to use rain water and how they're helping the Earth.
- **Solution 2: Educate and inspire others.** Create a handout, video tutorial, or show-and-tell presentation about how to make a rain collection device, how to use rain water and how that helps the Earth.

**Issue:** Parents often run their engines outside the school as they wait to pick up or drop off their children, which pollutes the air.

- **Solution: Change a rule, regulation or law.** Make a presentation to the school board or administrators about why this is a problem and suggest a new rule that makes the pick-up/drop-off area a "no idling" zone.

**Issue:** There's no sidewalk along a street near the elementary school, which makes it dangerous for children to walk home.

- **Solution: Make it permanent.** Make a presentation to the city council about the problem and suggest that they build a sidewalk. (Note: Even if the council doesn't vote to create a sidewalk, the girls have earned their Take Action award because they came up with a sustainable solution and took action through their presentation.)
- **Extra Inspiration:** Do an online search for "Girl Scout Brownies Convince City Hall to Build Sidewalk."

**Issue:** There have been several accidents at a busy intersection that doesn't have a stoplight.

- **Solution: Make it permanent.** Research the number of accidents and make a presentation to the city council, asking that they have a stoplight installed.

**Issue:** The local park doesn't have a swing for children with disabilities.

- **Solution: Make it permanent.** Make a presentation to the city council explaining the problem and offering to use troop money from the cookie sale to help pay for the swing.
- **Extra Inspiration:** Do an online search for "How One Brownie Troop Became Social Entrepreneurs.")

**Issue:** We should recognize women who have helped their communities and made the world a better place in all kinds of ways.

- **Solution: Educate and inspire others.** Research the “hidden figures” in your community (unsung women who’ve done great things). Create a display about their accomplishments for a library or community center.

**Issue:** It’s hard for new students to meet people and make friends at school.

- **Solution: Make it permanent.** Design and build “buddy benches.” Partner with the school to have the benches installed on the playground so kids who want to make new friends can find each other.

**Issue:** The local shelter is having a hard time getting rescue animals adopted.

- **Solution: Educate and inspire others.** Use your photography skills to create pet portraits for the shelter’s web site. Use your writing skills to craft heart-warming bios for each portrait.

## Need more ideas?

Check out [Girls Changing the World](#) on the GSUSA web site. Girls post their Take Action and Bronze/Silver/Gold Award projects on this site. You can search by project topic or grade level. (And after the troop has done their project, please post it so they can inspire other girls!)

## 33 Ways to Take Action!

### Make your solution permanent.

1. Make and install something outside (benches, bird houses, dog run, ropes course, sensory trail for children with disabilities, Little Library, etc.)
2. Plant something (butterfly garden, tree, wind chime garden, etc.)
3. Make something inside (Maker Space, reading room, etc.)
4. Create a collection (children's books children's hospital or family shelter, oral histories for town museum, etc.)
5. Advocate for building a permanent community improvement (sidewalk, bridge, park, streetlights, stoplight, etc.)

### Educate and inspire others to be part of the change.

6. Do a show-and-tell
7. Create a poster campaign
8. Perform a skit
9. Make a "how to" handout
10. Draw a comic
11. Give a speech
12. Write and perform a song
13. Make an animated movie
14. Make a live-action movie
15. Make a presentation
16. Create a workshop (perhaps in partnership with a local business or organization) to teach a skill such as coding, camping, canoeing, robotics, sewing, car care, healthy eating, gardening, home repair, budgeting, etc.
17. Create a workshop to teach others about healthy living (exercise, nutrition, mental health, etc.)
18. Create a social media campaign
19. Make video tutorials to teach a skill
20. Organize an email campaign
21. Organize a petition
22. Organize an event (concert, play, poetry slam, art exhibit, sporting event, field day) to raise awareness about an issue
23. Make a "playbook" to help others follow your lead (how to mentor robotics teams, organize a workshop or event, advocate to city council, create an online petition, change a law, etc.)
24. Make an app that helps people take action on an issue
25. Create a web site
26. Write an op-ed or letter to the editor of a newspaper or magazine
27. Start a blog

### Change a rule, regulation or law.

28. Make a presentation to your school principal
29. Make a presentation to your school board
30. Make a presentation to your city council
31. Speak up at your representative's town hall meeting
32. Create an online petition
33. Advocate for a law with your state government