

## Think Like a Programmer pt. 1

### Overview

New and unsolved problems are often pretty hard. If we want to have any chance of making something creative, useful, and clever, then we need to be willing to work on those hard problems to solve them.

In this meeting, Daisies complete a building challenge where they learn that failure is not a reason to give up. Instead, failing at a task gives you the information you need to change course and ultimately succeed. This approach to problems is known as *persistence*. Girls who learn how to persist, even when they're learning something hard, will be more likely to succeed as they take on more computational thinking challenges.

### Notes for Volunteers:

**Use The Talking Points (But Make Them Your Own):** In each session, you'll find suggested talking points under the heading "SAY." Some volunteers, especially new ones, find it helpful to follow the script. Others use the talking points as a guide and deliver the information in their own words. Either way is just fine.

**Be Prepared (It's What Girl Scouts Do!):** Each meeting includes a "Prepare Ahead" section that includes a materials list and what kind of set-up is required. Read it in advance so you have enough time to gather supplies and enlist help, if needed.

**Use Girl Scouts' Three Processes:** Girl-led, learning by doing, cooperative learning — these three processes are the key to making sure Daisies have fun in Girl Scouts and keep coming back.

"Learning by doing" and "cooperative learning" are built into this Journey, thanks to the hands-on activities and tips. You'll also find specific "keep it girl-led" tips in the meeting plans. They'll help you create an experience where Daisies know they can make choices and have their voices heard.

**Solve Big Problems Step By Step:** On this Journey, Daisies will do hands-on activities to learn how computer programmers think through problems. They'll learn to follow and create algorithms, break big problems down into smaller ones, and persist when faced with challenges.

You can help Daisies think this way! Encourage them to keep trying when their first few approaches to solving a problem don't work. Tell them that they can solve any problem if they break it down in smaller ones. And remind them that they can use those skills in their daily lives as well.

**Leave Time For The Closing Ceremony:** If Daisies are having fun doing an activity,

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you may be tempted to skip the Closing Ceremony so they can keep going — but the Closing Ceremony is absolutely key to their learning. Here's why:

When Daisies leave a meeting, they'll remember how much fun it was to plant a seed, make a suncatcher or play a game of "Programmer Says." However, they may not realize that they just learned how algorithms work — unless you tell them. When you do that, you turn a *hands-on* activity into a *minds-on* activity. During the Closing Ceremony, you can connect the dots for girls by:

- Pointing out how they acted as programmers. (For example: They used an algorithm to plant a seed or they created an algorithm to teach a skill to others. They struggled a bit with a challenging activity — but they persisted. Now they know that they can solve hard problems if they keep trying. They worked together to solve problems.)
- Reminding Daisies that they are *already* programmers — and that it's fun to solve problems using programming.
- Letting them know that they have what it takes to continue exploring STEM.

These simple messages can boost girls' confidence and interest in STEM — and end the meeting on an upbeat note!

**Tell Your Troop Story:** As a Girl Scout leader, you're designing experiences that girls will remember their whole lives. Try to capture those memories with photos or videos. Girls love remembering all they did — and it's a great way for parents to see how Girl Scouting helps their girls.

And please share your photos and videos with GSUSA by emailing them to [STEM@girlscouts.org](mailto:STEM@girlscouts.org) (with photo releases if at all possible!).

**Program Pairing:** The Count It Up Leaf goes well with this Journey!

### Prepare Ahead (Roughly 60-90+ minutes)

#### 1. Watch three videos (10 minutes)

***Building a Foundation* video (2:34):**  
[code.org/girlscouts/BuildingaFoundation/OverviewVideo](https://code.org/girlscouts/BuildingaFoundation/OverviewVideo)

This video explains what girls will learn and offers tips for facilitating Activity 4: Building a Foundation.

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### **Building a Foundation demo video (6:34):**

[code.org/girlscouts/BuildingaFoundation/DemoVideo](https://code.org/girlscouts/BuildingaFoundation/DemoVideo)

This video shows Activity 4: Building a Foundation being facilitated in a class.

**(Note to Volunteers:** This video was filmed in a classroom setting. Of course, Girl Scout troop meetings are not like school. Your girls won't sit at desks, and you may need to shorten your set-up.)

Listen for the main points you want to make with girls:

- *What do you think or feel when you're trying something new and maybe it's not going exactly like you planned? **Girls may say:** I won't finish in time, I'll never figure this out, I feel worried, I feel stressed out, etc.*
- *If we know we're going to feel like that when we do something hard and we know that everyone feels that way, guess what? That lets us say, Hey! I knew I'd feel this way. I'm going to keep working anyway.*
- *How do you feel when you keep working even though it's hard — and then you finally get it to work? **Girls may say:** Great, happy, excited, etc.*
- *As you're doing this activity, remember how you feel when you work really hard and you end up learning something.*

### **Never Give Up (Mouse vs Cookie) video (1:37):**

[code.org/girlscouts/BuildingaFoundation/NeverGiveUpVideo](https://code.org/girlscouts/BuildingaFoundation/NeverGiveUpVideo)

This video shows a mouse trying over and over again to carry a cookie until he finally succeeds.

You can show this to your troop to demonstrate the concept of persistence. **This is optional.** You may not have the wi-fi connection or the time to show the video.

## 2. Review vocabulary (2 minutes)

This meeting introduces new vocabulary:

- **Persistence** — trying again and again, even when something is very hard.

See the **Daisy Think Like a Programmer Journey Glossary** for more vocabulary and examples.

## 3. Read through this guide and its Meeting Aids (15 minutes)

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This will help you get familiar with the flow of the meeting.

Read the following handouts (found in the **Meeting Aids** section):

**Daisy Think Like a Programmer Journey Materials List:** Each meeting has its own materials list, but you can use this handout if you like to do all your supply shopping at one time. It includes all materials needed for the entire Journey.

**Daisy Think Like a Programmer Journey Glossary:** This is a list of words that Daisies may not know and how to define them.

**Think, Pair, Share:** These facilitation tips will help you to make sure that every girl's voice is heard during brainstorming activities.

**Take Action Guide:** This handout explains the difference between Take Action and Community Service. It also includes tips to make a project sustainable and Take Action project ideas that you and your troop can use as inspiration.

### 4. Gather materials (30 minutes)

Gather materials using the Materials List for this meeting. If your meeting location doesn't have a flag, bring a small one that Daisies can take turns holding or hang in the room.

### 5. Optional: Create some sample towers for Activity 3: Building a Foundation (30+ minutes)

The planning stage can be difficult for young girls. It may be helpful to make a couple of sample towers and bring them to the troop meeting. (You may want to hide them until it's time for the activity so girls don't get distracted.)

## Get Help from Your Family and Friends Network

Your Friends and Family Network can include:

- Girls' parents, aunts, uncles, older siblings, etc.
- Other volunteers who have offered to help with the meeting

Ask your Network to help:

- **Make snacks**

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- Bring art supplies and building elements
- Bring a laptop or tablet for girls to watch the *Never Give Up (Mouse v. Cookie)* video

### Award Connection

Daisies will earn two awards:

- Think Like a Programmer award
- Take Action award

Daisies will earn both awards following the completion of the Take Action project and Journey in **Think Like a Programmer PT. 6.**

**(Note to Volunteers:** You can buy these awards from your council shop or on the Girl Scouts' website.)

### Meeting Length

60 minutes

- The times given for each activity will be different depending on how many Daisies are in your troop.
- There is no snack time scheduled in these meetings. If girls need a snack, add 15 minutes to the overall time for the meeting.
- Give Daisies 10- and 5-minute warnings before they need to wrap up the last activity so you'll have time for the Closing Ceremony.

New and unsolved problems are often pretty hard. If we want to have any chance of making something creative, useful, and clever, then we need to be willing to attack hard problems.

In this meeting, Daisies complete a building challenge where they learn that failure is not a reason to give up. Instead, failing at a task gives you information you need to change course and ultimately succeed.

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Girls who learn how to persist, even when they're learning something hard, will be more likely to succeed as they take on more computational thinking challenges.

### Materials List

#### Activity 1: As Girls Arrive: Create a Special Handshake

- None

#### Activity 2: Opening Ceremony: All About Programmers

- Flag
- Optional: Poster Board with the Girl Scout Promise and Law

#### Activity 3: Building a Foundation

- Building Elements (about 30 per group, each group has 3 – 4 girls): Gumdrops and Toothpicks *OR* Marshmallows and Popsicle Sticks *OR* Popsicle Sticks and Tape
- Mini Paper Cup for checking height (1 per group)
- Book for testing strength (1 per group)
- Optional: Computer, tablet or other device with ability to show girls the [Never Give Up \(Mouse vs. Cookie\)](#) video
- Optional: Sample towers

#### Activity 4: Closing Ceremony: Take Action Like Programmers

- **Take Action Guide** handout

### Awards

Daisies do not receive any awards in this meeting.

### Detailed Activity Plan

#### Activity 1: As Girls Arrive: Create a Special Handshake

#### Time Allotment

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10 Minutes

### Materials

- None

### Steps

Welcome Daisies, and have them pair up to create a special Daisy Handshake to greet each other.

#### **SAY:**

*Have you ever made a special handshake with a friend?*

*Work with your partner to create one that celebrates being a Daisy! You can use this special handshake to say 'Hello!' when you see each other.*

*For example, you could do a fist bump, turn in a circle, and wiggle your fingers to greet each other!*

When there are a couple minutes left, have each pair share their special Daisy Handshake, and explain to them how they created a code that relates a message, just like computer programmers.

#### **SAY:**

*Each of your handshakes is a special code that shares your message about being a Daisy with your fellow Daisy friends.*

*Just like you, computer programmers are people who use special codes to give instructions and messages to computers and other programmers.*

*Programmers even use different coding languages to share the same message in different ways — just like you each had a different handshake to say hello.*

## Activity 2: Opening Ceremony: All About Programmers

### Time Allotment

10 Minutes

### Materials

- Flag

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- Optional: Poster Board with the Girl Scout Promise and Law

### Steps

Recite the Pledge of Allegiance and the Promise and Law.

Conduct any troop business.

Introduce Daisies to the Think Like a Programmer Journey.

### SAY:

*Today we are starting a new Journey where we are going to learn to think like computer programmers!*

*Does anyone know what programmers do?*

**Girls may say:** They work on computers, they code, they make websites.

*Programmers work together in teams and on their own to write special codes that run on computers, phones, and all other technology.*

*They create websites, apps and many other things that you use every day!*

Explain how programmers use computational thinking to solve problems.

### SAY:

*Have you ever had a problem that you had never solved before? How did that feel?*

**Girls may say:** Scary, nerve-wracking, etc.

*What did you do to tackle the problem? Did you create a plan?*

**Girls may say:** Created smaller steps, asked for help, etc.

*Those are some great ideas and strategies to solve problems. Today, we are going to build on these ideas and learn how to think like a computer programmer!*

*Programmers have a special ways of thinking and solving problems called computational thinking. They take big, big problems and break them down until they can create a program or solution that works for everyone.*

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*In this Journey, you're going to learn how programmers use computational thinking to create code and programs that help others.*

### Activity 3: Building a Foundation

#### Time Allotment

30 Minutes

#### Materials

- Building Elements (about 30 per group, each group has 3 – 4 girls): Gumdrops and Toothpicks *OR* Marshmallows and Popsicle Sticks *OR* Popsicle Sticks and Tape
- Mini Paper Cup for checking height (1 per group)
- Book for testing strength (1 per group)
- Optional: Sample towers
- Optional: Computer/tablet or other device with ability to show girls the [Never Give Up \(Mouse vs. Cookie\)](#) video

#### Steps

**(Note to Volunteers:** Give Daisies 10- and 5-minute warnings so they can wrap up in time for the Closing Ceremony.)

#### Set Up. (5 minutes)

Prior to the activity, set up your Sample Towers around the room. Do not announce that the samples are there. Try to encourage girls to locate the towers on their own if at all possible if they begin to get frustrated during the building stage of the activity.

Talk with Daisies about persistence and how important it is for overcoming challenges.

#### SAY:

*Have you ever started on a task, and then discovered that it was much harder than you thought it would be? Can anyone give me an example?*

**Girls may say:** Riding a bike, doing a cartwheel, learning something at school, etc.

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*It can take a while to learn hard things. Can you think of something that was hard at first, but that you can now do pretty easily?*

If you need to prompt girls, **SAY:**

*When you were a baby learning to walk, did you stand up and run across the room on your first try?*

*How did you learn to do that? You just kept trying!*

**SAY:**

*There's a word for that: Persistence.*

*Say it with me: Per-sis-tence.*

*That means trying again and again, even when something is very hard.*

*Stand up and let's make it into a cheer! Jump up and down as you say it!*

*Per-sis-tence!*

Have Daisies stand up and do the Persistence Cheer.

**Optional:** Show the *Never Give Up (Mouse vs. Cookie)* video here if you have time and a wi-fi connection.

**SAY:**

*In this next challenge, you're going to construct towers that are strong enough to hold a book for at least 10 seconds using everyday materials.*

*But you have to follow some rules:*

*You can only use the supplies you've been given to build your tower. If you break or lose some of your supplies, you won't get any more.*

*The tower can be any shape, but it has to be at least as tall as the paper cup.*

*The tower must support the weight of a book for 10 seconds.*

Divide girls into groups of 3 or 4. Remind girls that each group will work as a team to create their towers.

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**SAY:**

*How do good teams work together? What are some things they do?*

**Girls may say:** They share ideas, they listen to each other, they are friendly.

If girls can't come up with any ideas, offer prompts such as: listen to everyone's ideas, give everyone a chance to do the activity, help each other, etc.

**Brainstorm and Design. (5 minutes)**

Provide each group with limited supplies. Remind them that they won't get any more. You don't have to give any certain amount; just make sure you put some limit on materials.

Explain the challenge to the girls, and show them the book and paper cup.

**SAY:**

*In your teams, you are going to build a tower. The tower must be able to support the weight of this book and be taller than this paper cup.*

Encourage girls to think about how they want to build their first tower before starting.

**SAY:**

*Programmers help each other by sharing their ideas and helping each other make the ideas better, even before they start a project.*

*Share your idea with your team to get ideas to make your tower better.*

**Build and Test. (10 minutes)**

As girls begin building, float around the room to offer encouragement, but don't tell them how to "fix" their tower.

**[If you created a few tower examples and set them up in the room, suggest girls walk around the room if they get frustrated. Let them discover the sample towers on their own.]**

Have girls test out more than one idea.

Ask girls to let you know when they think they've met the challenge. Test each structure. Is it taller than the cup? Does it hold a book?

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If not, encourage girls to go through a cycle of planning, fixing, testing, and planning again until the challenge has been met.

Congratulate the girls as they succeed.

Take pictures of the successful towers (if possible) to upload to the Code.org site!

### Share and Reflect. (5 minutes)

Have girls share their towers with each other.

#### SAY:

*What was your favorite part about building the tower?*

*Was there a time that you thought about giving up? How did you get past that feeling?*

*What worked well for your team? How did you help each other?*

Permission for use of Code.org activities is provided by Code.org, a non-profit dedicated to giving every student in every school the opportunity to learn computer science. See [www.code.org](http://www.code.org).

## Activity 4: Closing Ceremony: Take Action Like Programmers

### Time Allotment

10 Minutes

### Materials

- **Take Action Guide** handout

### Steps

Have Daisies form a Friendship Circle.

Share with girls that they will be planning a Take Action project.

#### SAY:

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*When programmers solve problems and create new technology, they help people. Girl Scouts help people, too. You create Take Action projects to make a difference.*

*At each meeting, you'll come up with problems you'd like to solve. I'll keep a list of your ideas, so you can choose one for a Take Action project.*

Share some Take Action ideas from the **Take Action Guide** to get Daisies thinking.

Tell girls about the Journey awards they'll earn.

### **SAY:**

*You'll earn two awards on this Journey. The first one is called the "Think Like a Programmer" award. You'll earn that for learning how to solve problems like a programmer.*

*The second one is called the "Take Action" award. You'll earn that for doing a Take Action project that will make a difference in the world.*

Review "persistence" with the girls.

### **SAY:**

*We learned a new word today: persistence. Do you remember what it means?*  
**(Answer: Trying again and again, even when something is very hard.)**

*You were all very persistent today!*

*Remember, hard tasks can make us want to give up, but if we stick to our goal and keep trying, then we just might make something better than we've ever made before!*

Repeat the Persistence Cheer if there's time.

End the meeting with a Friendship Squeeze.

## Think Like a Programmer 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.

## Computer Science/STEM Take Action Ideas

**Issue:** Some girls think computer science is hard or boring or just for boys.

- **Solution: Educate and inspire others.** Create a girls' coding club that meets at lunch-time or recess. Teach other girls how to play with tangrams or learn algorithms by making functional suncatchers.

**Issue:** Some kids think computer science is too hard to understand.

- **Solution: Educate and inspire others.** Make a video to explain algorithms, using fun examples like baking a cake, planting a flower or giving directions. Show it to your class at school or to a group of friends.

**Issue:** More kids need to know that how computer programmers can help others and make the world a better place

- **Solution: Educate and inspire others.** Do some research about people who used code to help others, and then create a video or slideshow to show at your school.

**Issue:** Not everyone knows about women who changed the world using their knowledge of computer science.

- **Solution: Educate and inspire others.** Research the “hidden figures” in your community. They might be women who have helped shape history, like those portrayed in the movie Hidden Figures. Or you might want to profile computer science teachers who have made a difference by mentoring and encouraging girls. You could create a display about their accomplishments for a library or community center or make a video about them and show it at school.

**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:** More kids need to know that engineering is a fun, creative way to help others.

- **Solution 1: Educate and inspire others.** For show-and-tell, explain what you've learned about how engineers help others, then lead a design challenge activity with your class.
- **Solution 2: Make it permanent.** Partner with a teacher or principal to create an "engineering space" at school where kids can make prototypes and share ideas for new inventions. Put out a call for donations of recyclable materials or cheap prototyping supplies (cardboard boxes, tape, string, paper towel tubes, etc.) to stock the space.

**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:** 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:** 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:** 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:** 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 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

## Think Like a Programmer Journey

### Glossary for Daisies

Daisies may not know some of the words used on this Journey. Here are definitions you can share with them:

**Persistence** is trying again and again, even when something is very hard.

An **algorithm** is a list of steps that you can follow to finish a task. A recipe is an example of an algorithm; it tells you how to cook a dish by following step-by-step instructions.

A **program** is an algorithm that has been coded into something that can be run by a machine.

**Debugging** is finding and fixing problems in your algorithm or program.

## Think Like a Programmer Journey: Materials List

### Think Like a Programmer 1

#### Activity 2: Opening Ceremony: All About Programmers

- Flag
- Optional: Poster Board with the Girl Scout Promise and Law

#### Activity 3: Building a Foundation

- Building Elements (about 30 per group, each group has 3 – 4 girls): Gumdrops and Toothpicks OR Marshmallows and Popsicle Sticks OR Popsicle Sticks and Tape
- Mini Paper Cup for checking height (1 per group)
- Book for testing strength (1 per group)
- Optional: Sample towers
- Optional: Computer, tablet or other device with ability to show girls the Never Give Up (Mouse vs. Cookie) video

#### Activity 4: Closing Ceremony: Take Action Like Programmers

- Take Action Guide

### Think Like a Programmer 2

#### Activity 1: As Girls Arrive: Algorithm Drawings

- Paper
- Markers or crayons

#### Activity 2: Opening Ceremony: Algorithms in Everyday Life

- Flag
- Flip chart, white board, poster or large piece of paper
- Marker
- Optional: Poster Board with the Girl Scout Promise and Law

#### Activity 3: Happy Maps

- Prior to the activity, create different tape trails for each group of girls to navigate stuffed animals through to a prize. These can be simple trails made out of 90 degree angles with a prize at one end and stuffed animal at the other. See **Sample Happy Map Trails** for ideas.
- Masking tape
- Stuffed animals (one for each group of 2-4 girls)
- Prize (one for each group of 2-4 girls). This can be anything (snack, WRAP, etc.)
- Board or flipchart to write on
- **Happy Map Arrows** (one sheet for each group of 2-4 girls)
- Scissors
- Optional: **Worksheet: Move the Flurbs** (one for each girl)  
An “assessment worksheet” sounds a lot like school, but girls will probably see this as a fun puzzle page. If there’s time, girls could do the activities in the meeting or you could give each girl a copy to take home. Perhaps they’d like to show their families what they learned about programs and algorithms by doing the worksheet together

## Think Like a Programmer Journey: Materials List

### Think Like a Programmer 2 (continued)

#### Activity 4: Closing Ceremony: Brainstorming Our Take Action Project

- Take Action Guide

### Think Like a Programmer 3

#### Activity 1: As Girls Arrive: Daisy Planting Power!

- Containers (such as empty milk cartons) to plant seeds in Activity 3: Plant a Seed. If you have a small troop, you may want to bring a container for each girl. For larger troops, bring a container that 3 – 4 girls can share.
- Construction paper strips to fit around containers
- Markers
- Stickers
- Tape
- Scissors

#### Activity 2: Opening Ceremony: All About Algorithms

- Flag
- Optional: Poster Board with the Girl Scout Promise and Law

#### Activity 3: Plant A Seed

- Decorated Containers from Activity 1: As Girls Arrive: Daisy Planting Power!
- **Plant a Seed Worksheet** (one for each girl) Tip: To save time, you can cut out the pictures ahead of time and put them in envelopes (one worksheet per envelope).
- Blank paper
- Glue or tape
- Potting soil
- Seeds
- Water
- Flip chart, white board, poster or large piece of paper
- Marker
- Optional: **Worksheet: Real Life Algorithms** (one for each girl)

An “assessment worksheet” sounds a lot like school, but girls will probably see this as a fun puzzle page. If there’s time, girls could do the activities in the meeting or you could give each girl a copy to take home. Perhaps they’d like to show their families what they learned about algorithms by doing the puzzles together.

#### Activity 4: Closing Ceremony: Time to Decide on Take Action!

- List of Daisies’ Take Action ideas from the last meeting, written a whiteboard or poster board (if Daisies can read)
- Marker

## Think Like a Programmer Journey: Materials List

### Think Like a Programmer 4

#### Activity 1: As Girls Arrive: Draw Your Algorithm

- Paper
- Crayons or colored markers

#### Activity 2: Opening Ceremony: Share Your Special Algorithms

- Flag
- Optional: Computer/tablet or other device with ability to show girls the Computer Science is Changing Everything video
- Optional: Poster Board with the Girl Scout Promise and Law

#### Activity 3: Designing Our Take Action Project

- Poster boards
- Markers or crayons
- Pens and pencils
- Paper

### Think Like a Programmer 5

#### Activity 2: Opening Ceremony: Getting Ready to Take Action

- Flag
- Optional: Poster Board with the Girl Scout Promise and Law

#### Activity 3: Creating Take Action

- Any materials Daisies need for their Take Action project

### Think Like a Programmer 6

#### Activity 1: As Girls Arrive: Get Ready to Celebrate!

- Girl Scout Promise and Law poster(s)
- Any items Daisies want to display (such as photos or videos from their Take Action project)
- Photos and videos from the Journey meetings
- Music system
- Decorations
- Snacks

#### Activity 2: Opening Ceremony: Welcome!

- Flag
- Optional: Poster Board with the Girl Scout Promise and Law

#### Activity 3: Awards Ceremony and Celebration

- Think Like a Programmer award
- Take Action award

(Note to Volunteers: You can buy these awards from your council shop or on the Girl Scouts' website.)

## Think Like a Programmer Journey: Materials List

### Think Like a Programmer 6 (continued)

#### Activity 4: Girl Survey

- If girls are taking the survey online: Laptop/tablet
- If girls are filling out the survey on paper: Copies of Girl Survey (pdf available in Meeting Aids) and pen or pencil

## Brainstorming Tips: Think, Pair, Share

### How to Run a Think, Pair, Share Activity:

Tell girls that they're going to brainstorm answers to your question using "Think, Pair, Share."

Lead girls through the basic steps by telling them they will:

#### 1. Break into small groups.

#### 2. Listen to the question or prompt.

#### 3. Think about their answers.

- Girls may want to write their answers down.
- Twenty seconds should be enough time, since girls will need to sit quietly.

#### 4. Pair with other girls.

- Girls talk with one to three other girls (depending on group size), making sure everyone has a chance to share their answers. If there's time, it's OK for girls to ask questions about each other's answers.
- For pairs, 20 seconds should be enough time. If your troop enjoys discussion, consider extending this to 1 to 2 minutes.

#### 5. Share with the group.

- Girls share their answers with the larger group.
- This can be completed in 20 – 30 seconds, but will run longer based on group size and how the group sharing is done.

### There are two ways to set up group sharing:

- **Strongly Recommended:** One girl shares the best/most interesting/summary answer for the group. This approach is great if you're running short on time. It also helps develop conflict resolution and compromise skills.
- **Optional:** Each girl shares her partner's answer. This helps girls develop active listening skills, but will run longer because all girls are sharing.

## **The Girl Scout Promise**

**On my honor, I will try:**

**To serve God and my country,**

**To help people at all times,**

**And to live by the Girl Scout Law.**

## **The Girl Scout Law**

**I will do my best to be**

**honest and fair,**

**friendly and helpful,**

**considerate and caring,**

**courageous and strong, and**

**responsible for what I say and do,**

**and to**

**respect myself and others,**

**respect authority,**

**use resources wisely,**

**make the world a better place, and**

**be a sister to every Girl Scout.**