

Think Like a Programmer pt. 6

Overview

Brownies celebrate what they've learned and receive their Think Like a Programmer and Take Action awards.

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 Brownies 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 Brownies know they can make choices and have their voices heard.

Solve Big Problems Step By Step: On this Journey, Brownies 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 Brownies 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 Brownies are having fun doing an activity, 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 Brownies 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

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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 Brownies 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 (with photo releases if at all possible!).

Program Pairing: The Brownie Computer Expert badge goes well with this Journey!

Girl Input: GSUSA wants to know what girls think about this program. We also want to find out how well the program worked in terms of increasing girls' interest, confidence, and competence in STEM. This information will help us to improve our program and talk about the program's impact. Please encourage your girls to take this survey so that their voices are heard. There are three ways you can help girls do this:

- **Option 1 – Girls Take the Survey at the Last Meeting:** You will need technology (i.e. tablets, laptops, wi-fi) to use this option. Set aside 10-15 minutes for girls to complete the survey. Use this link: <http://www.tinyurl.com/STEMgirlCSb>
- **Option 2 - Send Survey Link to Parents:** Email parents and ask them to have their girls complete the girl survey. Here is some suggested text for your email to parents:

Dear Parent –

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GSUSA wants to know what girls think about this program. We also want to find out how well the program worked in terms of increasing girls' interest, confidence, and competence in STEM. This information will help us to improve our program and talk about the program's impact.

Please encourage your girl(s) to take our survey by clicking on the following link: <http://www.tinyurl.com/STEMgirlCSb>. It should only take 10-15 minutes. Depending on your girl's age, you may need to help her understand the questions. However, please do not help her select her answers – we want the responses to come from her.

If you have any questions, please email the Girl Scout Research Institute at gsresearch@girlscouts.org.

Sincerely –

- **Option 3 – Print The Survey, Have Girls Complete It, & Send The Surveys To GSUSA:** If you are unable to have girls complete the survey at the last meeting and unable to send parents the link to the survey for girls to complete, please print copies of the Girl Survey. You'll find the survey in the Meeting Aids section of this meeting.

1. Have each girl complete her own survey.
2. Either scan the surveys and email them to: GSresearch@girlscouts.org .

OR

3. Mail the surveys to:
Girl Scout Research Institute
GSUSA
420 Fifth Avenue
16th floor
New York, NY 10018

Prepare Ahead (Roughly 100+ minutes)

1. Read through this guide (15 minutes)

This will help you get familiar with the flow of the meeting. Depending on your girls' Take Action project, you may need to prepare or set up specific things.

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2. Invite others to the Celebration (15+ minutes)

Send reminders about the Celebration to the Brownies' families with the time and place of the meeting.

Invite any special guests, such as people in the community who have helped the Brownies with their Take Action project.

3. Gather party supplies and decorations (40 minutes)

Bring decorations and snacks for your Brownies and their guests. Bring a music system.

Collect all the materials Brownies created from the Journey, photos of their Take Action projects, and photos and videos you've taken along the way.

In particular, you might want to include the girls' Morse Code Name drawings, suncatchers, Personal Innovations posters and prototypes, or their Troop Recipe for Success poster.

From your council shop or the Girl Scout website, buy the Think Like a Programmer and Take Action awards, one for each Brownie.

If your meeting location doesn't have a flag, bring a small one from home to either hang or have the girls take turns holding.

4. Gather support for the Celebration (10 minutes)

If you need more adult helpers to organize everything for the Celebration, let them know the time and place of the meeting, and brief them on what the girls are doing and what they need to have prepared.

5. Choose how you and your girls will complete the Girl and Volunteer Surveys (20 minutes)

Choose how girls will give feedback on the Journey. Look at the three options available for girls to take the survey in the "Note to Volunteers" section.

Complete your own Volunteer Survey to give feedback on the Journey. You can find this at the end of the Meeting Activity Plan.

Get Help from Your Family and Friends Network

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Your Friends and Family Network can include:

- Brownies' parents, aunts, uncles, older siblings, cousins, and friends
- Other volunteers who have offered to help with the meeting.

Ask your Network to help:

- Bring a camera, smart phone, or video camera to document the final celebration.
- Brings snacks for the final celebration.
- Supply a CD player and music CDs for the final celebration.

Award Connection

Brownies will earn two awards:

- Think Like a Programmer award
- Take Action award

Brownies will earn both awards in **Activity 3: Awards Ceremony and Celebration.**

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

Meeting Length

90 minutes

- The times given for each activity will be different depending on how many Brownies are in your troop.
- There is no snack time scheduled in these meetings, but there are 15 minutes of "wobble room" built in for snacks or activities that run long.
- Give Brownies 10- and 5-minute warnings before they need to wrap up the last activity so you'll have time for the Closing Ceremony.

Brownies celebrate what they've learned and receive their Think Like a Programmer and Take Action awards.

Materials List

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

- Girl Scout Promise and Law poster(s)

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- Any items Brownies 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.)

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

Activity 5: Closing Ceremony: Closing the Circle

- None

Detailed Activity Plan

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

Time Allotment

10 Minutes

Materials

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

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- Music system
- Decorations
- Snacks

Steps

Have Brownies help set up the meeting room by putting up posters and decorations. Make sure they greet guests as they walk in and offer them a snack.

When guests have all arrived, have Brownies give a warm welcome to their guests by saying together: *"Welcome, everyone!"*

Activity 2: Opening Ceremony: Welcome!

Time Allotment

10 Minutes

Materials

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

Steps

Have Brownies recite the Pledge of Allegiance and the Girl Scout Promise and Law. Then, have them introduce any special guests.

Activity 3: Awards Ceremony and Celebration

Time Allotment

35 Minutes

Materials

- Think Like a Programmer award
- Take Action award

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

Steps

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Brownies stand in front of guests and share one thing that they learned while they were on the Think Like a Programmer Journey or while doing their Take Action project.

They can make this into a “show and tell” by showing their Morse Code Name drawings, suncatchers, Personal Innovations posters and prototypes, the Troop Recipe for Success poster, or photos or video from their Take Action project.

Ask Brownies to stand in front of their audience.

SAY:

Can each of you give an example of something you learned on this Journey?

Give each Brownie a chance to speak. If she wants to pass, she can.

SAY:

Please step forward when I say your name to accept your awards.

Lead a round of applause for each Brownie as she steps forward.

SAY:

You have earned your Think Like a Programmer award, which means you learned how to see needs in the world and come up with algorithms to teach others and solve problems.

And you have earned your Take Action award because you did something to make the world a better place.

Now you'll start your celebration!

Include any activities — such as taking photos, dancing or singing a special song—that Brownies decided to do as part of the celebration.

Activity 4: Girl Survey

Time Allotment

10 minutes if you are doing the survey during the last meeting.

Materials

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Think Like a Programmer pt. 6

- 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

Steps

Brownies complete the Girl Survey about the Think Like a Programmer Journey.

SAY:

The people at the Girl Scouts' national office want to know what you think about it, how you think it could be improved, and what you think of STEM in general. This is a great chance for you to help Girl Scouts create STEM programs that other girls will enjoy!

It will take about 10 – 15 minutes.

Explain to girls how they will be taking the survey – either online or by filling out a printed version.

(Note to Volunteers: We hope that all girls will complete the survey—we want every girl's voice to be heard. However, the survey is voluntary, so girls don't have to take the survey if they don't want to. Also, for young girls, we encourage you to read the questions aloud while girls individually complete the survey.)

Activity 5: Closing Ceremony: Closing the Circle

Time Allotment

10 Minutes

Materials

- None

Steps

Have Brownies and guests stand in a Friendship Circle. Brownies lead the Closing Ceremony.

SAY:

Brownies would like to end this Journey together with a Closing Ceremony.

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Have Brownies lead the close of the meeting in the way they chose—for example, a song, poem, or a cheer.

SAY:

And now we'll finish with our Girl Scout tradition, a Friendship Squeeze.

End the meeting with a Friendship Squeeze with Brownies and guests.

On your honor!

Think Like a Programmer Journey

Glossary for Brownies

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

Computational thinking is the thought process involved in solving a problem and expressing its solution(s) in a way that a computer—human or machine—can effectively carry it out.

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.

A **function** is a piece of code that you can easily call over and over again.

A **variable** is a placeholder for a piece of information that can change.

Decomposition is when you break a hard problem up into smaller, easier ones.

A **pattern** is a theme that is repeated many times.

Abstraction is removing the details from a solution so that it can work for many problems.

Innovation is a new or improved idea, device, product, etc.

A **prototype** is a sketch of an idea or model for something new. It's the original drawing from which something real might be built or created.

Inventors are people who make up new things and products.

Think Like a Programmer Journey: Materials List

Think Like a Programmer 1

Activity 1: As Girls Arrive: Morse Code Messages

- Morse Code handout
- Paper
- Markers or crayons

Activity 2: Opening Ceremony: All About Solving Problems

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

Activity 3: Paper Programming

- Paper Programming Example Sheet
- Four-by-Four Activity Worksheet (at least one for each pair of girls)
- Blank paper or index cards for programs
- Relay Programming Activity Packet (one for each group)
- Extra sheets of 4x4 paper grids and blank paper to use as practice. These are also provided as part of the Relay Programming Activity Packet.
- Markers, pens, or pencils
- Optional: Computer/tablet or other device with ability to show girls the [Unplugged – Graph Paper Programming](#) and [Unplugged – Relay Programming](#) videos

Activity 4: Closing Ceremony: Making the World a Better Place

- Optional: Take Action Guide

Think Like a Programmer 2

Activity 1: As Girls Arrive: Paper Programming

- Worksheet: Graph Paper Programming (one for each girl or group)
- Worksheet: Relay Programming (one for each girl or group)
- Paper
- Pencils

Activity 2: Opening Ceremony: Use Computational Thinking Everyday

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

Activity 3: Functional Suncatchers

- One foot of string, thread, or fishing line per girl
- 2-4 beads per girl
- 2-4 other accessories (buttons, hoops, spacers) per girl
- One special bead, prism, button, or girl-made sun charm per girl
- Pens, Pencils, & Scissors
- Functional Suncatchers Skills Sheet (one for each group)
- Create a suncatcher to use as an example for the activity
- Prepare a program and two skills with blank steps on a large paper or blackboard for the girls to help you fill in during Part 1. (Sample can be found on the **Functional Suncatchers Skills Sheet**.)
- Optional: Computer/tablet or other device with ability to show girls the [Unplugged – Functional Suncatchers](#) video

Think Like a Programmer Journey: Materials List

Think Like a Programmer 2 (continued)

Activity 3: Functional Suncatchers (continued)

- Optional: **Worksheet: Functional Suncatchers** (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, debugging, functions, and variables by doing the worksheet together.

Activity 4: Closing Ceremony: Brainstorming Our Take Action Project

- List of Brownies’ Take Action ideas from Think Like a Programmer 1
- Optional: **Take Action Guide**

Think Like a Programmer 3

Activity 1: As Girls Arrive: Walk the Line

- Prepare masking tape trails made of right angles (one for each group of 3-4 girls). See **Sample Trails for Walk the Line** for ideas.
- Blindfold (one for each group of 3-4 girls)
- Masking Tape

Activity 2: Opening Ceremony: Reviewing Our Take Action Ideas

- Flag
- List of Take Action ideas from last meeting
- Index Cards (or a whiteboard and marker)
- Pens
- Tape
- Optional: Poster Board with the Girl Scout Promise and Law

Activity 3: Personal Innovations

- Post-its or slips of paper and tape (at least one for each girl)
- Markers, pens, or pencils
- Poster paper for sharing innovations (one for each girl)
- **Personal Innovations Activity Guide** (one for each girl)
- Markers, pens, or pencils
- Tape to hang posters

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

- Brownies’ Take Action ideas on index cards.
- Optional: Computer/tablet or other device with ability to show girls the [Computer Science is Changing Everything](#) video

Think Like a Programmer Journey: Materials List

Think Like a Programmer 4

Activity 1: As Girls Arrive: Innovate Your Take Action!

- Paper
- Pencils, crayons and markers

Activity 2: Opening Ceremony: Brownie Programming Power!

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

Activity 3: Designing Our Take Action Project

- Large pieces of paper or poster boards
- Markers
- Post-It notes
- Pens/pencils

Think Like a Programmer 5

Activity 1: As Girls Arrive: Our Recipe for Success

- Poster board or large paper
- Paper
- Colored markers

Activity 2: Opening Ceremony: Why is Our Project Important?

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

Activity 3: Creating Our Take Action Project

- Any materials Brownies 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 Brownies 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

Think Like a Programmer Journey: Materials List

Think Like a Programmer 6 (continued)

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.)

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

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.