# BROWNIE
## Coding for Good Badges

**BADGE SERIES OVERVIEW:**

*In the Coding for Good badge series,* Brownies explore how computer scientists create programs, video games, and apps that can help others.

To earn the Coding Basics badge, Brownies create algorithms and use loops to make the steps of their algorithms repeat over and over again. They also learn that events cause things to happen before finding out about an important woman in computer science and creating their own set of commands.

To earn the Digital Game Design badge, Brownies learn how game designers develop simple computer games and plan their own maze game. They use an iterative design process to plan, create, and improve their game.

To earn the App Development badge, Brownies find out how computer scientists develop apps. They decompose a problem to break it into smaller parts. They use what they've learned to design app screens, add algorithms and events to the show how users interact with the app, and share their app idea for user feedback.

## Follow the Program Progression:

**The Coding for Good badges have been designed to give girls a progressive learning experience. For the Coding for Good badges, the badge progression is:**

1. **Coding Basics**
2. **Digital Game Design**
3. **App Development**

**Plug It In!:** The K-5 Coding for Good badges are unplugged — no device needed! However, if girls want to practice coding on a device as part of the badges, you can use codeSpark Academy on a computer (or other device). CodeSpark Academy is a program that teaches kids, especially girls, the basics of coding. See the **Brownie Coding for Good Badges – Plug It In** meeting aid for more information on how to access codeSpark Academy and lead girls through the plugged activities.
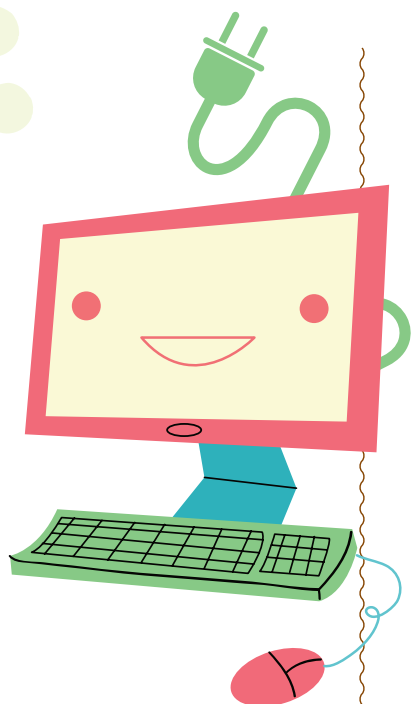
**Use The Talking Points (But Make Them Your Own):** In each session, you'll find suggested talking points under the heading "SAY." Some volunteers, especially new ones, find it helpful to follow the script. Others use the talking points as a guide and deliver the information in their own words. Either 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 girls 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. Remember to keep the meetings girl-led so you can help create an experience where girls know they can make choices and have their voices heard.

**Solve Big Problems Step By Step:** In these badges, girls will do hands-on activities to learn how computer programmers think through problems to create videos games and apps. They'll learn to follow and create algorithms, break big problems down into smaller ones, and persist when faced with challenges.

You can help girls 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 girls 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 girls leave a meeting, they'll remember how much fun it was to do an activity, but they may not realize its relationship to coding. For example, 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.

**That's why the Closing Ceremony is so important. It's where you can connect the dots for Brownies by:**

- *Pointing out how they acted as programmers. (For example: They created an app to solve a problem or a game to build awareness. They struggled a bit with a challenging activity — but they persisted. Now they know that they can solve hard problems if they keep trying.)*

- *Reminding girls 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 Brownies will remember their whole lives. Try to capture those memories with photos or videos. Brownies love remembering all they did, and it's a great way for parents to see how Girl Scouting helps their Brownies!

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

## To Prepare for the Meetings:

Before each meeting, you'll find an Overview, notes to Prepare Ahead, and a Materials List, all specific to that meeting.

**Before each meeting, read through the meeting plan and any meeting aids.** This will help you get familiar with the flow before each meeting.

Handouts specific to the meetings are listed in the Prepare Ahead section of each meeting under Meeting Aids. **In addition, the following handouts are available in the Meeting Aids for every meeting:**

- **Brownie Coding for Good Badges – Materials List:** Each meeting has its own materials list. However, if you like to do all your supply shopping at one time, use this handout. It includes the materials needed for all three Brownie badges.

- **Brownie Coding for Good Badges – Glossary:** This is a list of words introduced in the three Brownie Coding for Good badges with definitions.

- **Brownie Coding for Good Badges – Plug It In:** If girls want to practice coding on a device as part of the Coding for Good badges, you can use codeSpark Academy on a computer (or other device). This toolkit has for more information on how to access codeSpark Academy and lead girls through the plugged activities.

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

**Go over words girls can learn.**
In the Prepare Ahead section for each meeting, you'll see a list of words girls may or may not know and how to define them. You can find a full list of vocabulary for the Coding for Good badge series in the **Brownie Coding for Good Badges – Glossary**.

**Gather materials for the badge activities.**
Before each meeting, gather materials for the meeting's activities. Review the materials list to see what you already have or if there are items you can ask girls to bring. If your meeting location doesn't have a flag, bring a small one that you can take turns holding or hang in the room.

Each meeting includes its own materials list. However, if you like to do all your supply shopping at one time, use the **Brownie Coding for Good Badges – Materials List**. It includes the materials needed for all three Coding for Good badges.
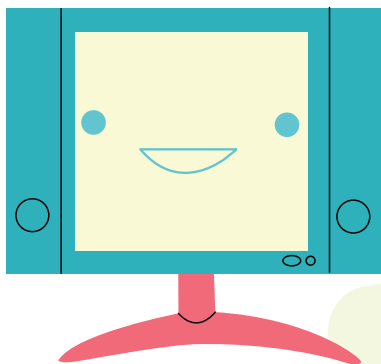
# Badge Series and Meeting Length

- This series of badges has been designed to fit into six 90 minute troop meetings.
- There is no snack time scheduled in these meetings, but you can add 15 minutes of "wiggle room" for snacks or activities that run long.
- The times given for each activity may be different depending on how many girls are in your troop. Prior to each meeting, review the activities and time allotment to determine how much time your troop will need to complete the activities. You can adjust times for each activity as needed.
- Give girls 10- and 5-minute warnings before they need to wrap up the last activity so you'll have time for the Closing Ceremony.

# Get Help from Your Family and Friends Network

**Your Friends and Family Network can include:**

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

**Ask your Network to help:**

- Bring materials or other supplies to the meeting.
- Assist with badge activities.
- Make snacks.

# Award Connection

**Girls earn three badges:**

- Coding Basics
- Digital Game Design
- App Development

(**Note to Volunteers:** You can purchase the awards from the Girl Scouts Shop or from your council shop.)

# *Coding for Good* BADGE BREAKDOWN

### CODING BASICS 1

1. **As Girls Arrive**
   Teach your Favorite Dance Move
2. **Opening Ceremony**
   Jump Into Coding Basics
3. Create Algorithms for a Comuter that Follow a Sequence
4. Use Loops to Improve Your Algorithm
5. Use events to Make Things Happen
6. **Closing Ceremony**
   Use Coding to Solve Problems

- Brownies learn how programmers write code to make computers solve problems.
- They follow and create an algorithm to color in a quilt pattern.
- They create algorithms for dance routines that use loops to make the steps repeat.
- They play a game to learn about events.

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### CODING BASICS 2

1. **As Girls Arrive:** Play with Events
2. **Opening Ceremony:** See Coding in Your Everyday World
3. Learn about Women in Computer Science
4. Create Your Own Set of Commands that Use Events
5. **Closing Ceremony:** I'm a Computer Scientist & Awards

- Brownies explore how programmers debug to find and fix errors in their programs.
- They learn about Grace Hopper and create a timeline of her life.
- They create a set of commands to practice using events.
- They receive their Coding Basics badge.

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### DIGITAL GAME DESIGN 1

1. **As Girls Arrive**
   Play with Events
2. **Opening Ceremony:** See Coding in Your Everyday World
3. Discover How Game Design Can Be Used for Good
4. Explore Tools Used to Develop Digital Games
5. Plan a Maze Game
6. **Closing Ceremony:** Developing Games for Good

- Brownies learn how game designers develop simple computer games and practice using the game design process.
- They brainstorm how games can be used "for good."
- They navigate a maze to learn about the coding blocks and commands.
- They create a character, obstacles, objects, and goal as part of planning their own maze game.

## DIGITAL GAME DESIGN 2

1. **As Girls Arrive:** Gather Ideas from Unplugged Games
2. **Opening Ceremony:** Building a Maze
3. Build and Test Your Maze Game
4. Share and Improve Your Maze Game
5. **Closing Ceremony:** I'm a Game Maker & Awards

- Brownies practice using iteration in game design as they build, test, and share their own maze game.
- They build and playtest 3D versions of their mazes using their paper plans.
- They share their game with others and identify game improvements.
- They receive their Digital Game Design badge.

## APP DEVELOPMENT 1

1. **As Girls Arrive:** Solve a Puzzle with Decomposition
2. **Opening Ceremony:** What's an App?
3. Discover How Apps Can Be Used for Good
4. Decompose the Needs of Your App User
5. Design Your App Screens
6. **Closing Ceremony:** Solve Problems for Others with Apps

- Brownies learn about user-centered design as they explore how computer scientists develop apps.
- They brainstorm different ways apps solve problems.
- They decompose a problem to break it into smaller parts.
- They identify what's important to their user and create screens to plan their app solution.

## APP DEVELOPMENT 2

1. **As Girls Arrive:** Touch Base with Your User
2. **Opening Ceremony:** Design Apps that People Can Use
3. Create Algorithms for your App that include Events
4. Share and Improve Your App with User Feedback
5. **Closing Ceremony:** I'm an App Developer & Awards

- Brownies learn that testing is an important step in app development.
- They add events and algorithms to their app screens.
- They test their app ideas by sharing them with their user and brainstorm app improvements.
- They receive their App Development badge.