girl scouts

Junior

JUNIOR
Coding for Good Badges

BADGE SERIES OVERVIEW:

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

To earn the Coding Basics badge, Juniors create algorithms and use loops to make the steps of their algorithms repeat over and over again. They also learn how to add in conditionals that allow their programs to run under certain situations. They find out about an important woman in computer science and create their own set of commands.

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

To earn the App Development badge, Juniore explore how computer scientists develop apps with user-centered design. They decompose a problem to break it into smaller parts. They interview their user, design app screens, and add conditions to the show how the app works. Then, they share their app idea for user feedback

NOTES TO VOLUNTEERS:

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 **Junior 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 girls by:

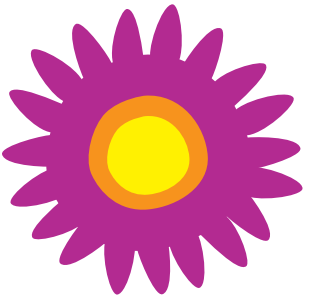
- *Pointing out how they acted as programmers. (For example: They created an app to solve a problem or a game to build awareness. They struggled a bit with a challenging activity — but they persisted. Now they know that they can solve hard problems if they keep trying.)*
- *Reminding girls that they 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 girls will remember their whole lives. Try to capture those memories with photos or videos. Juniors love remembering all they did, and it's a great way for parents to see how Girl Scouting helps their girls!

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. In addition, the following handouts are available in the Meeting Aids for every meeting:

- **Junior Coding For Good – 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 Junior badges.
- **Junior Coding for Good Badges – Glossary:** This is a list of words introduced in the three Junior Coding for Good badges with definitions.
- **Junior 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 **Junior 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 **Junior 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:** Rock, Paper, Scissors
2. **Opening Ceremony:** Explore Coding Basics
3. Create Algorithms for a Computer that Follow a Sequence
4. Use Loops to Improve Your Algorithm
5. Keep Your Code Interesting with Conditionals
6. **Closing Ceremony:** Use Coding to Solve Problems

- Juniors learn how programmers write code to make computers solve problems.
- They follow an algorithm to create trail mix as they learn about efficient programs.
- They create algorithms for handshakes that use loops to make the steps repeat.
- They play a game to learn about conditionals.

CODING BASICS 2

1. **As Girls Arrive:** Simon Says Conditionals
2. **Opening Ceremony:** Building on Your Coding Knowledge
3. Create Your Own Set of Commands that Use Conditionals
4. Learn about Women in Computer Science
5. **Closing Ceremony:** I'm a Computer Scientist & Awards

- Juniors practice using conditionals.
- They create a set of commands with conditions.
- They play a game to learn about Margaret Hamilton.
- They receive their Coding Basics badge.

DIGITAL GAME DESIGN 1

1. **As Girls Arrive:** Strike a Pose!
2. **Opening Ceremony:** Jump into Digital Game Design
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

- Juniors 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, goal, and conditions 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

- Juniors 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

- Juniors learn about user-centered design as they explore how computer scientists develop apps.
- They brainstorm different ways apps solve problems.
- They interview their user to find out their user's needs.
- 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

- Juniors learn that testing their app with their user is an important step in app development.
- They add conditionals to their apps.
- They test their app ideas by sharing them with their user and use their feedback to make improvements to their app design.
- They receive their App Development badge.