



## Cadette Coding Basics Badge

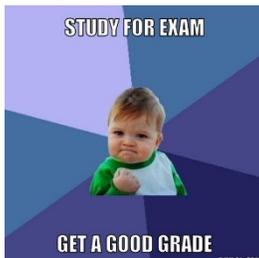
**Pillar:** STEM

**Outcomes:** Strong Sense of Self, Challenge Seeking

When you've earned this badge, you'll know how programmers write code to give computers instructions, and how computers can be used to solve problems to help others.

### Cadettes will earn their badge by:

1. Learn about functions and arguments in JavaScript
  - a. An **algorithm** is a detailed, step-by-step process followed in order to complete a specific task or to solve a specific problem. Click [here](#) to watch a video explaining algorithms.
  - b. **JavaScript** is one of the fundamental programming languages used online and it's used to make programs interactive. Any time you do anything on a website that's interactive, such as clicking a button, playing a video game, or seeing an ad pop up, that code was written in JavaScript.
  - c. In all programming languages, a **function** is a type of instruction in an algorithm that's like a verb – a function does something. Watch [this video](#) on functions. An **argument** names the specific thing a function can do. **Syntax** is like the grammar rules of a programming language. Just as there are rules about punctuation and capitalization in human languages, computer languages have rules, too. An example of a function with arguments in JavaScript with the correct syntax is: **readTextbook('social studies','chapter 3')**. This is telling your computer to read a textbook. To get more specific, you look inside the parenthesis to see that you need to read your Social Studies textbook, and only chapter 3.
  - d. What are other algorithm functions you can think of? Remember the functions video shows an algorithm for tying your shoes? What about steps for brushing your teeth or making macaroni and cheese? Write some out.
  - e. Learn these words of programming vocabulary by clicking [here](#): algorithm, argument, JavaScript, meme, software, syntax, code, function, pixel, propaganda, X-Y coordinates, pseudocode
2. Explore how memes are created
  - a. **Memes** use unexpected combinations of images and words to send a message that can be funny or thought-provoking. Click [here](#) to learn about the origin of memes.
  - b. Below are some examples of memes. Sketch one meme that is funny and one that is thought-provoking.



3. Write pseudocode for a meme
  - a. **Pseudocode** is a detailed, yet readable, description of what a computer program or algorithm must do. It is written so humans can understand the code, but it is not yet in the computer programming language. The Pseudocode is often shared with other programmers to receive constructive



feedback about the algorithms. **Constructive criticism** is the process of offering valid and well-reasoned opinions about the work of others, usually involving both positive and negative comments, in a friendly manner rather than an oppositional one. For example, instead of saying “You have to stop leaving things until the deadline!,” one should say “In the future try to plan ahead, make a schedule to get things done in time.”

- b. An example of writing a pseudocode for a meme is: Find an image of a dog smiling. Write “THAT FEELING WHEN” on one line at the top of the image in all capital letters. Then write “YOU GET YOUR FRIENDS TO RECYCLE” under the dog on one line in all capital letters.
- c. Create your own pseudocode for your meme by finding or drawing an image and adding text to it.

#### 4. Write sharable code

Pseudocode is great for planning your program, but computers don’t understand it. You have to turn it into shareable code. **Syntax** is rules for how a program is written. Just like grammar rules tell you to start a sentence with a capital letter and end a sentence with a period, syntax in coding works in the same way: it’s a standard format for writing code that the computer understands. In programming, the syntax needs to be exactly correct for a computer to know what to do. When you follow correct syntax, not only will other programmers understand your algorithm, the computers will too.

#### 5. Share your meme

- a. The goal of any meme is to send a message. Some memes are meant for everyone, while others are inside jokes created for a smaller group of people (think about an experience you have as a Girl Scout that others might not have). Keep in mind that memes can get changed or used in ways the creators didn’t expect.
- b. Use [this website](#) or use paper and markers to create a meme and share it with members of your household. You can even create a couple of memes and set up a small art exhibit in your home!

Meet a female computer pioneer: [Katherine Johnson](#) worked as a mathematician at NASA starting in 1953.

**Share your work** on the [GSKSMO Virtual Art Show](#)

**When you’re finished:** Congratulations, you have earned your badge! You can purchase by emailing [shopdept@gksmo.org](mailto:shopdept@gksmo.org) or at <https://www.girlscoutshop.com/cadette-coding-basics-badge>

No shipping charges apply at this time.

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