# STEAM WITH THE PROGRAM TEAM

## Writing Code
*Technology*

### MATERIALS NEEDED:

- Paper
- Pencil
- Crayon/markers
- Peanut butter and jelly (or other sandwich supplies)
- Bread
- Knife
- Plate

### THE SCIENCE:

**Computers seem really smart but they don't think for** themselves, they only do exactly what we tell them.

**Computers don't understand English, but they do understand a** language called *code*. Computer Scientists will create a list of detailed steps for computers to follow called an *algorithm*.

## Badge Steps

*Take a look at the requirements and see if the activities will help you complete the following badge steps.*

Daisy: Coding for Good 1
– Step 1

Brownie: Coding for Good 1
– Step 1

Junior: Coding for Good 1
– Step 1

Cadette: Robotics 1
– Step 4

Senior: Robotics 1
– Step 4

Ambassador: Robotics 1
– Step 4

Finished with your badge? Now buy it for your uniform. Order online at https://www.girlscoutshop.com/HEART-OF-PENNSYLVANIA-COUNCIL.

We would love to see you in action! Snap a photo and sent it to marcomm@gshpa.org
Please include name, troop #, and what she is working on.

## ACTIVITY ONE: Can you be the computer?

Reminder: Do not look on the example page at the end until you have finished Step One!

Step One:
With your paper and drawing tool you will be creating a picture by following my directions. Ready?
1. Draw a line
2. Draw a large circle
3. Draw a medium circle.
4. Add a small circle at the top.
5. Draw a small triangle in the small circle.
6. Add two dots
7. Draw a spiral between the small and medium circle
8. Add two straight lines coming out of the middle circle
9. Add a line of dots down the drawing
10. Add a straight line on the top circle
11. Now add a rectangle to that line.

Step two:
Now you can look at page four...

Reflect
Does your picture look like the example? Why not? What would have helped make yours look like the example? Why are details important?

## ACTIVITY TWO: Can you be the programmer?

You will be writing an algorithm for making a peanut butter and jelly sandwich, or any **sandwich if you don't like PB & J.  You will** need an adult volunteer who is very good at following directions precisely.

Have your volunteer watch this YouTube video without you to get an idea of what they need to do.

Step one: Take 5 minutes to write an algorithm (directions) for your sandwich. You will be writing the instructions pretending your volunteer has never made a sandwich before.

Step two: Tell the directions to an adult (computer). Repeat your directions exactly has you wrote them.

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Step three: Troubleshoot the algorithm (directions). Did your computer complete the **sandwich? What didn't work, what do you need to add to the algorithm so the** computer (volunteer) can complete the task?

Step Four: Repeat Steps 2 and 3 until you have a sandwich.

REVIEW:

1. Why do algorithms need to be specific when working with computers?
2. How did you work through a failure?
3. What succeeded and why?