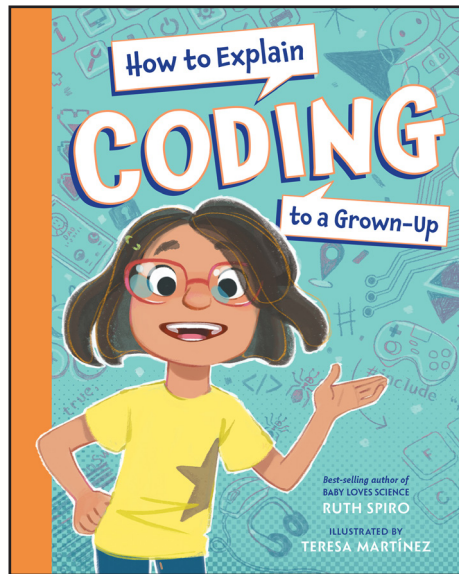


# How to Explain CODING to a Grown-Up

## ACTIVITY KIT

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Ruth Spiro  
Illustrated by Teresa Martínez  
978-1-62354-318-1 HC  
e-book available

### About the Book

Grown-ups do NOT have all the answers! In this tongue-in-cheek guide, an in-the-know narrator instructs kid readers in the fine art of explaining coding to a grown-up. Both children and their adults learn the basics of coding, including hardware, software, algorithms, and debugging. Clever “pro tips” suggest best practices for teaching any topic.

Fun and fact-filled, the How to Explain Science series will empower kid experts to explore complex scientific concepts with any grown-up who will listen.

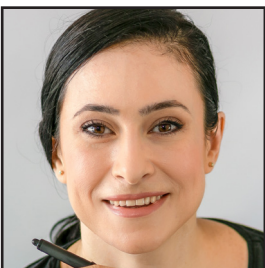
### About the Author

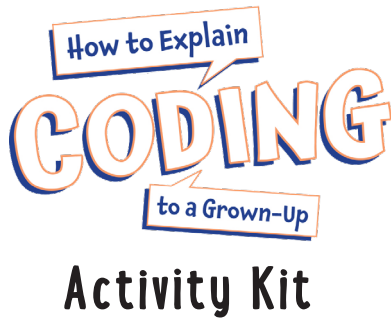
Ruth Spiro is the author of the bestselling Baby Loves Science series, which has been praised for introducing “big science to little minds with the skill of a neurosurgeon” (Matthew Winner, *All the Wonders* podcast). Ruth also wrote the Made by Maxine picture-book series. She speaks regularly at STEM and early-childhood conferences across the country.



### About the Illustrator

When Teresa Martínez was a child, her family moved from a small town to the city. Drawing helped shy Teresa connect with the other kids at school. Now she connects with children across Mexico and around the world through the books she illustrates, including *Mario and the Hole in the Sky*; *Again, Essie?*; and *Sing with Me*.





## Before Reading

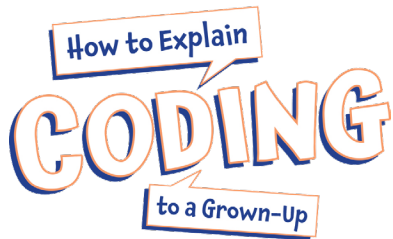
Pre-reading concept reviews help enrich students' learning experience!

### For younger students (K-2nd):

- After looking at the cover of the book and reading the title, ask students what they think *How to Explain Coding to a Grown-Up* is about. Write their responses on chart paper.
- Explain what a computer is. Discuss how computers are part of everyday life. Can your students identify a computer? Do they ever play with toys or use tools that have computers in them?

### For older students (3rd-5th):

- Based on the title and cover, ask students to describe what they think the book is about. Write their responses on chart paper.
- Have students discuss the following questions in small groups. Tape questions to a wall and ask students to tape their answers beneath the questions.
  - What is a computer?
  - What is coding?
- Discuss how computers play a role in your students' lives. Would it be possible to go a day without using any computers (including devices that contain computers, like cars, smartphones, microwaves, or programmable ovens, etc.)?
- Have students ever needed to explain how something works to a peer, younger kid, or grown-up? How did they explain? What do they think is helpful when someone explains something to them?



## Activity Kit

# Math: Hopscotch Algorithms

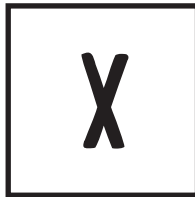
Name: \_\_\_\_\_

Date: \_\_\_\_\_

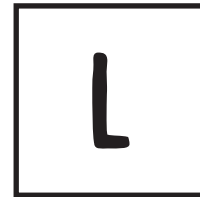
Use at least four of the components below to plan a hopscotch algorithm. Sketch your algorithm on a spare sheet of paper and then use chalk or large paper cutouts to create an algorithm you and your classmates can jump on!



Jump once in the direction of the arrow



Jump over this block (Do not land on it)



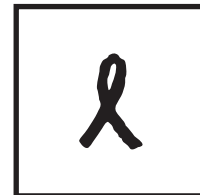
Land on this block with your left foot



Land on this block with your right foot



Turn around and jump backwards in the direction of the arrow



Return to the start of the hopscotch algorithm



The end

How to Explain  
**CODING**  
to a Grown-Up  
**Activity Kit**

# Technology: Computers Everywhere!

Name: \_\_\_\_\_

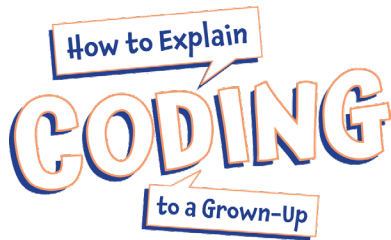
Date: \_\_\_\_\_

For one day, write down every computer or computerized device you use in the table below. Add a tally mark in the second column every time you use the device.

**Device Name**

**Number of Uses**

Device Name	Number of Uses



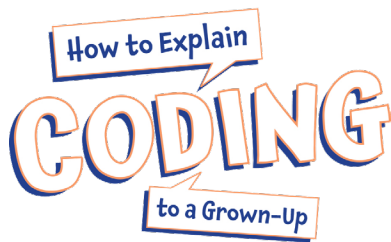
## Activity Kit

# History: Where Coding Began

Use this guided research project for older students to explore the origins of coding and learn more about how the profession has changed over time.

## Procedure

- 1. Pre-project discussion.** Computers are a major part of modern society, but they are still a relatively new invention. What do your students know about the history of computers and coding? What are they curious about?
- 2. Group projects.** Divide students into small groups and assign them a research topic related to the history of coding or ask them to pick their own topic. Sample topics include:
  - The origins of computing and the first computer
  - Ada Lovelace (the first computer programmer)
  - Katherine Goble Johnson and the human “computers” of NASA
  - The origin of the internet
  - Alan Turing (decoder of the Enigma cipher and creator of the first modern computer)
  - Linus Torvalds (creator of Linux)
  - The origin of video games
- 3. Work time.** Offer students research support through your school library. Encourage them to consult both digital and print sources. See the “History of Coding” section on page 8 of this kit for some suggestions.
- 4. Presentation of results.** Ask students to collect their research and present it to the class with a slide presentation, trifold board, or other visual aid. All group members should contribute to the final presentation.



## Activity Kit

# Language Arts: How to Explain (Anything!)

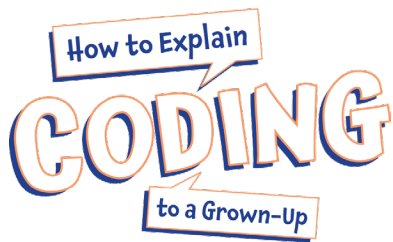
Use this guided writing project for older students to develop expository reading and writing skills.

## Materials

- One jar of jam
- One loaf of bread
- One butter knife
- A plate or other sanitary surface like a cutting board

## Procedure

- 1. Pre-project discussion.** What is expository writing? What kinds of expository writing have your students read? (For example: recipes, video game instructions, student handbooks, the Help section on their phone or computer.) What are some characteristics of good expository writing? How is expository writing like or unlike coding?
- 2. Introduce the task.** Show students your materials and tell them that today, you will be the computer and they will be the coders. Your task is to spread jam on a slice of bread. They will give you step-by-step instructions.
- 3. Attempt number one: verbal.** Spreading jam on bread is easy, right? Invite a couple of students to verbally give you the instructions. Follow their instructions precisely (for example, if they tell you to put your knife in the jar without first telling you to open the jar, tap the lid a couple of times with the knife).
- 4. Attempt number two: written.** Divide the class into small groups and ask each group to write down step-by-step instructions for spreading jam on a piece of bread. Come around to each group when their work is finished and demonstrate following their instructions.
- 5. Independent work.** In class or as homework, assign students to independently write an “algorithm” for a common task, such as tying their shoes, putting on a winter coat, feeding a pet, or watering a plant.



## Activity Kit

# Word Search

Name: \_\_\_\_\_

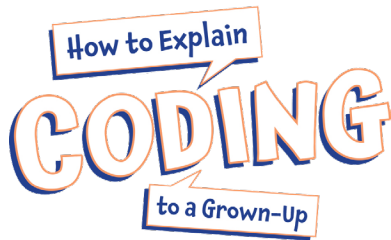
Date: \_\_\_\_\_

A	E	L	H	U	P	M	P	R
L	S	O	F	T	W	A	R	E
G	T	O	R	B	E	N	O	C
O	O	P	D	U	X	T	H	O
R	A	D	E	B	U	G	Q	D
I	V	A	R	I	A	B	L	E
T	C	O	M	P	U	T	E	R
H	I	P	R	O	G	R	A	M
M	N	S	L	I	D	A	T	A

CODE  
ALGORITHM  
COMPUTER

DEBUG  
LOOP  
SOFTWARE

DATA  
VARIABLE  
PROGRAM



## Activity Kit

## Related Reading

### How to Code

Briggs, Jason R. *Python for Kids: A Playful Introduction to Programming*. No Starch Press, 2022.

Dickins, Rosie, and Jonathan Melmoth. *Coding for Beginners Using Scratch*. Usborne Publishing, 2019.

Funk, Josh, and Sara Palacios. *How to Code a Rollercoaster*. Viking Children's Books, 2019.

Singh, Komal, and Ipek Konak. *Ara the Star Engineer*. Page Two Books, 2018.

Spiro, Ruth, and Irene Chan. *Baby Loves Coding!* Charlesbridge, 2018.

### History of Coding

Calkhoven, Laurie, and Alyssa Petersen. *Women Who Launched the Computer Age*. Simon & Schuster, 2016.

Robbins, Dean, and Lucy Knisley. *Margaret and the Moon: How Margaret Hamilton Saved the First Lunar Landing*. Knopf, 2017.

Slade, Suzanne, and Veronica Miller Jamison. *A Computer Called Katherine: How Katherine Johnson Helped Put America on the Moon*. Little, Brown Books for Young Readers, 2019.

Stanley, Diane, and Jessie Hartland. *Ada Lovelace: Poet of Science*. Simon & Schuster, 2016.

Wallmark, Laurie, and Katy Wu. *Grace Hopper: Queen of Computer Code*. Union Square Kids, 2017.

Wallmark, Laurie, and Katy Wu. *Hedy Lamarr's Double Life: Hollywood Legend and Brilliant Inventor*. Union Square Kids, 2019.