Lesson 01 | Coding 1, 2, 3!

★ Objectives

I can sequence commands to solve a problem.

Summary

In this lesson, students are introduced to code and writing code in a code editor on 9 Dots. Students first practice following movement code blocks in sequence. Then, the teacher models writing code on the board and students practice writing code up to 4 lines.

✓ Agenda

1. **Activate: What is Code? [15 min]**
2. **Try: Writing in Sequence [10 min]**
3. **Build: The First Mystery [30 min]**
4. **Reflect: Think and Celebrate [5 min]**

❑ Materials

- ❑ Slideshow
- ❑ Model Challenge
- ❑ Guided Challenge
- ❑ Computers

➢ Standards

- K-2.AP.12
- K-2.AP.13
- CCSS.MATH.PRACTICE.MP1
- CCSS.ELA-LITERACY.SL.1.4

◎ Concepts & Strategies

- Code
- Computer
- Sequence

Activate: What is Code? [15 min]

Participation: Whole group

❑ **INTRODUCE** students to coding class.

"Welcome to coding class! In this class, we will learn how to code on a computer!"

❑ **MOTIVATE** students for today's lesson by introducing Dr. Castro and PixelBot Penguin.

"We got a message from someone! Let's read it together."

❑ **DEFINE** vocabulary words.

- Computer- a machine that follows instructions.
- Code- instructions that tells a computer what to do.
- Coder- a person who writes code to tell a computer what to do.
- Sequence- a set of things in order.

❑ **GUIDED PRACTICE**: Have the class practice acting out movement code blocks on the slide. Demonstrate what each of the icons mean.

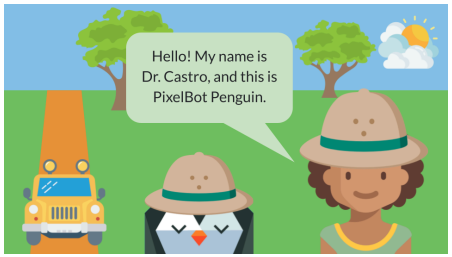
"Code blocks give a computer directions on what to do. This code tells us to jump. (Click to see the animation.) *This block code tells us to clap. Let's practice!"* (Ask students to stand up and perform the actions on the code blocks. Point at the jump, point at the clap, and ask students to follow along.)

Let's look at our first practice problem. A sequence is a set of things in order, and when we follow code, we read directions from top to bottom, 1, 2, 3. First, we need to jump. Second, we need to clap. Third, we need to clap again. When we are reading the code, I will point to the lines of code, and say "1… 2… 3…." and it is your job to do what the code says!" (Ask students to follow the code in sequence on slides 11-13)"

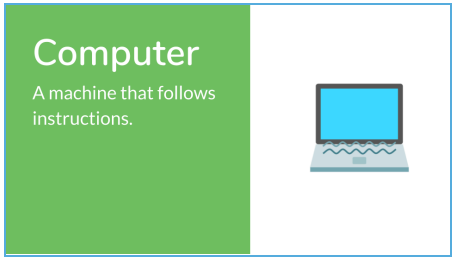
✓ **How did we know to jump and clap?** *The code told us to.*
✓ **Why didn't we run or sit down?** *The code didn't tell us to.*

"When we are following code in sequence, we only do the actions listed in the sequence! We wouldn't run, sit

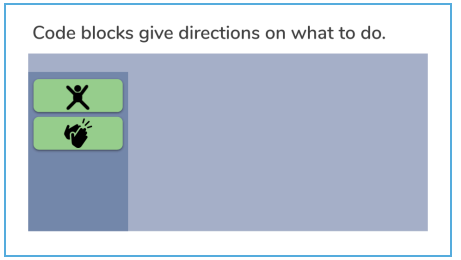
REQUIRED MATERIALS: Model Challenge



MOTIVATE



DEFINE



GUIDED PRACTICE

down, or dance, because those are not in the sequence!"

❑ **NARRATE** the theme's quest for students.

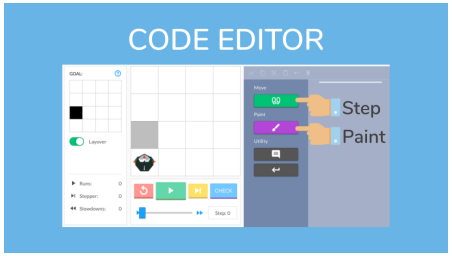
"PixelBot Penguin and I are on an adventure to find nine lost mystery animals and return them to their homes. We need your help! You can help us by completing code challenges. First, I will show you how to use the code editor!"

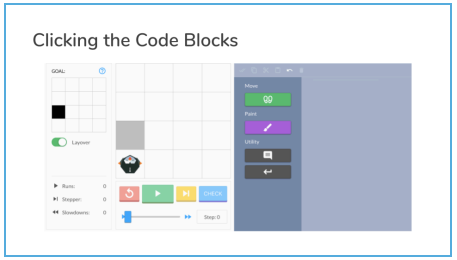
❑ **INTRODUCE** the code editor to students. Use the slide animations to help students visualize the tools.

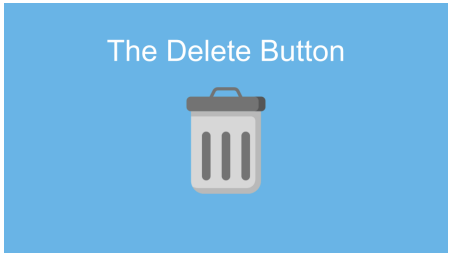
- CODE EDITOR
  - The Code Editor is where we give directions to the computer.
  - There are two code block buttons today, step and paint.
- Clicking the Code blocks: When we click on the code block buttons, the blocks we click on will show up on the right side.
- The Delete Button: When we want to take away code blocks, we need to click on delete, or the "invisible trash can."
- Invisible Trash Can: When our cursor moves over the code block the invisible trash can appears on the right side, and when we click on it, our code blocks are taken away.
- Clicking Run Code: When we click on the green "run code button", the PixelBot will act out the code instructions that we give it in order. If we give instructions for the PixelBot to step, it will step. If we give instructions for the PixelBot to paint, it will paint.
- Click Check & Next: When we are ready to try another coding challenge, we click on the blue "check" button, then the pink "next" button.

❑ **MODEL**: Introduce the "Writing Code" slide for the Model Challenge: Long Horns with the grid goal and commands. Use the script below to think aloud while using the slide transitions to demonstrate writing code on the platform. (Open the challenge on the platform to model writing code.)

"Our goal is to move PixelBot to the grey pixel, then paint that pixel. The code blocks we can use are step and paint. I notice my PixelBot is facing up. First, I need to step, so I will click the step block first. (Click on the step block.) *Then, I need to step again 2 more times.* (Click on the step block two more times.) *Then, I need to paint, so I will click the paint block.* (Click on the paint block.) *I can see what my code does by clicking the run*







INTRODUCE

TIP: Play through the animations prior to class to know how the slide transitions can assist with instruction.

code button. (Click on the green run button.) *If it is correct, I can click check."* (Click on the Check button.)

Try: Writing in Sequence [10 min]

Participation: Whole group

REQUIRED MATERIALS: Guided Challenge

- ❑ **GUIDED PRACTICE**: Invite students to come to the board to point at the commands to solve the Guided Challenge: Grasslands on the board.

  - ✓ **Which way is the PixelBot facing?** *Down.*
  - ✓ **Which code block should we use first? Second? Third?** *Step, paint, step, paint.*
  - ✓ **Can we click paint first, then move? Why/why not?** *No, because we need to move our PixelBot to the correct location, then click paint.*

GUIDED PRACTICE
TIP: Invite students to explain how they know they should step or paint first.

Build: The First Mystery [30 min]

Participation: Independent

REQUIRED MATERIALS: Computers

- ❑ **NARRATE** the theme by reading the slide and pointing out the names of the challenges.
- ❑ **INTRODUCE** students to today's task.

  "Today, your goal is to click on the step and paint code blocks, then run code to see how your code works! If your code is right, click the blue check and pink next to move on!"

- ❑ **INDEPENDENT PRACTICE**: Students log in to 9 Dots and complete the PixelBots playlist. To support individual students as they work, ask the questions below.

  - What is our goal? What should we do first?
  - How can we see what our code is doing?

Log in to 9 Dots.

INDEPENDENT PRACTICE
TIP: The bonus challenges preview using two new commands, turn left and turn right. These commands are the subject of lessons 3 and 4.

Reflect: Think and Celebrate [5 min]

Participation: Whole group

- ❑ **REFLECT:** Invite students to turn and talk. Then, have 2-3 students share with the class.
  - ✓ **What did you learn today?**
  - ✓ **What is sequencing ?**
- ❑ **NARRATE** the theme's adventure by reading Dr. Castro's message.
- ❑ **REVEAL** the mystery animal using slide animation.
- ❑ **CELEBRATE** by having students give their partner a positive comment.

  "Turn and tell your partner, 'Great job writing code today!'"

NARRATE