Lesson 4: How Many Blocks Do You Need?

Powerful Ideas of Computer Science	Algorithms, Modularity
Powerful Ideas of Literacy	Sequencing, Editing and Audience Awareness
PTD	Communication
Palette of Virtues	Open-Mindedness, Patience, Curiosity
Children will be able to…	● Identify purposes for changing parameters in ScratchJr. ● Change parameters in ScratchJr.
Vocabulary	● Parameter: a number instruction that tells ScratchJr how many times to do something
Teacher Preparation	● Read lesson plan. ● Read about the people featured on the Pictures of Programmers slideshow. Have it open before class starts. ● Print Lesson 4 Check for Understanding or pull up the Lesson 4 Check for Understanding slides. ● Print the ScratchJr Block Cut Outs and cut out the top area of each page.

Warm Up

- **Pictures of Programmers** *(Suggested Time: 5 minutes)*
  - Illustrate that programmers can be of all different backgrounds (gender, race, ethnicity, age) with pictures (including one of yourself!).
    - Ask children: "What do you think these people have in common?"
    - Answer: They're all programmers.
  - Explain that today, everyone will be a programmer!

Opening Tech Circle

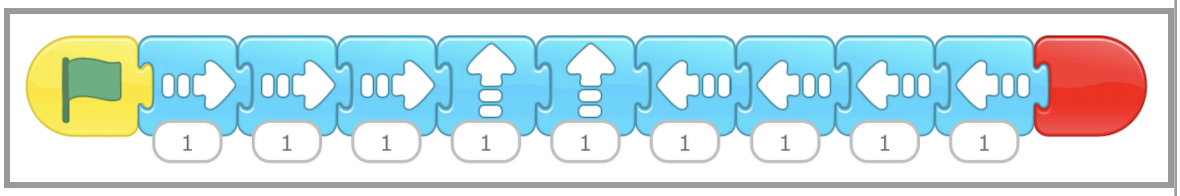
- ***Programmer Says*** **(***Suggested Time: 10 minutes)*
  - This activity is played like the traditional *Simon Says* game, in which children repeat an action if Simon says to do something. Use the ScratchJr Block Cut Outs for this activity to focus on step-by-step instructions and order matters.

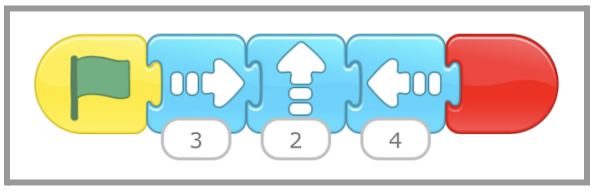
- Briefly introduce each programming instruction and its meaning (use only the blocks listed in the Materials section for this lesson).
- Have the class stand up. Hold up one big ScratchJr block cut out at a time and say, "Programmer says _____." Each instruction should be included more than once.

ScratchJr Time

Structure Challenge:

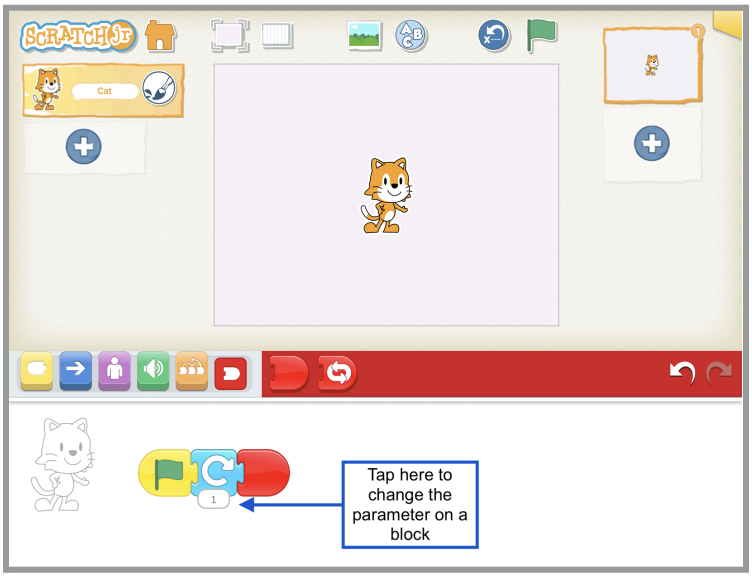
- **What is a Parameter?** *(Suggested Time: 10 minutes)*
  - Explain what a **parameter** is...
    - Tell a computer how many times to do that action.
    - By using a parameter, you can make your code do the same action with fewer blocks. Instead of using 5 moving forward blocks, we can use 1 forward block and set the parameter to 5. This can save you time and space!
  - For example, see examples of long and short programs below. Ask children to observe the motion blocks and think about the differences or similarities between these two programs. See if they notice that these two programs will make the characters do the same actions.



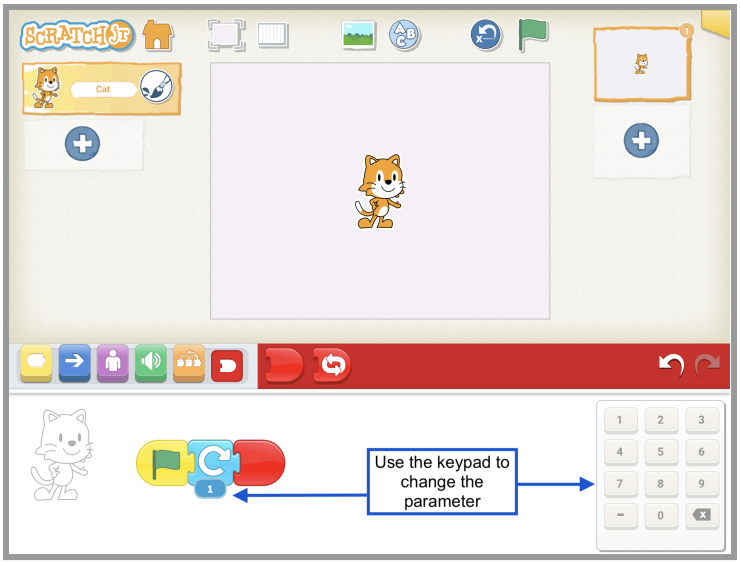


  - Then, explain how it works in ScratchJr using the steps below:

- Select the block you wish to change the parameter on. Tap on the bubble with a number to use the keypad to change the number.



- The keyboard will appear on the right side of the screen.



- Use the keyboard to change the parameter (max two-digit number).

- Once you've entered the new parameter, tap anywhere on the screen, and the key will disappear.

NOTE: Change the parameter to "0" to have a character change its body position.

Lesson 4 Check for Understanding: Before starting a project, check your children's understanding of the new concepts they've just learned. Read each question to the children and have the children respond with a thumbs up for "yes" or a thumbs down for "no." Stop and re-explain concepts as needed.

Expressive Explorations:

- **Free Play** *(Suggested Time: 10 minutes)*
  - Free play with Motion Blocks and parameters!

- To foster open-mindedness and curiosity, challenge children to find as many different ways as possible to program Cat moving 10 steps.

Closing Tech Circle

- **Share Creations (***Suggested Time: 10 minutes)*
  - Ask children to tell you what sharing would look like, and then what it would sound like (e.g., listening while others are presenting, asking questions about others' projects, or providing compliments to peers).
  - When sharing projects, remind children to show their code in order to emphasize not only the final product but also the process and the language of code used to create their program.
  - Have each child share their creation with the class. Encourage the other students to think of questions or compliments. The presenting child can select two peers to share their questions or compliments.

Opportunities for Differentiation

- **Virtual Learning**
  - Children hold device in front of screen.
- **Activity Variation**
  - *Programmer Says* 1: Children take turns as the "Programmer" and give instructions to their peers.
  - *Programmer Says* 2: Include Start and End blocks to each instruction, so each instruction will be "Programmer says _____" with a full program.