# Number Patterns and Counting with ScratchJr.

## Brief Overview:
Students work in small groups to determine how many steps Scratch will take to walk across the stage. Students will use the ScratchJr app to code a program for counting by 1's, 5's and 10's.

**Target Grade Levels:**
1st

**Time:** 15-minute center rotations

## Computer Science SOLs:
**Target SOLs:** 1.1, 1.2
**Supporting SOLs:** 1.3

## Content SOLs:
**Target SOLs:** Math 1.1 a, d
**Supporting SOLs:** Math 1.14

## Objectives:
Students will:
- Count steps by 1's, 5's and 10's (option to add: count by 2's)
- Identify numeric patterns
- Build algorithms (instructions) to create a computer program
- Apply critical thinking skills when debugging (testing) programs

## Materials/ Prep:
- iPads or ActivPanel with app
- ScratchJr. App

## CS Vocabulary:
- Algorithm -A list of steps to finish a task.
- Program - An algorithm that has been coded into something that can be run by a machine.
- Debug - Finding and fixing problems in an algorithm or program.

## Teaching Guide:
1. Open the ScratchJr. App and create a new project.
2. Add a background and move Scratch to left side of the background.
3. Have students use the green flag start block and the move right code block to create a program that will move Scratch from the left to the right side of the screen counting by 1's, 5's and 10's. (See directions below for setup)
4. After students understand how to move around and use coding blocks give them another challenge with a new scene. For example, have them move Scratch to the surfboard in the beach scene or have them move Scratch to touch the globe in the classroom scene.
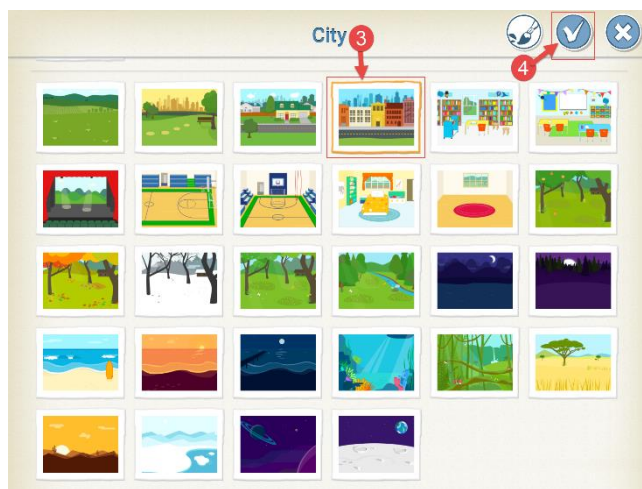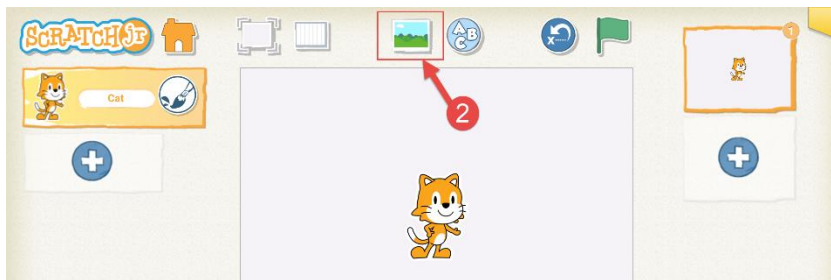
## Credits and Links:

# Number Patterns and Counting with ScratchJr

**1.** Open the ScratchJr App. Create a new project by tapping the plus button.
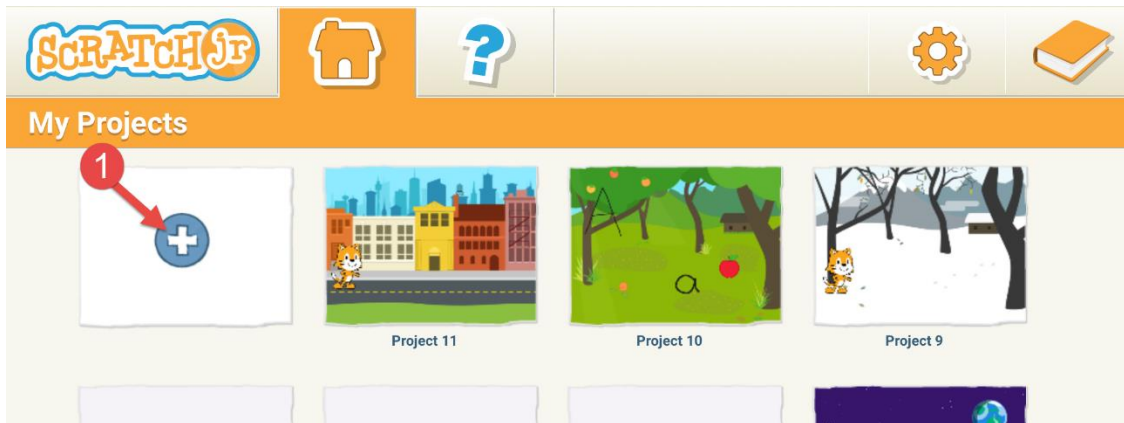


**2.** Tap the picture icon (shown) to add the city background.
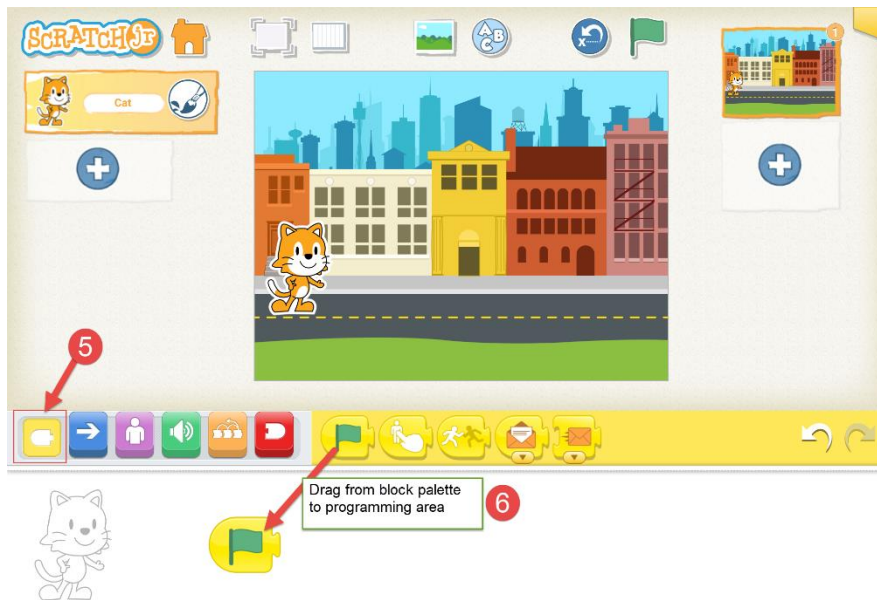




**3.** Drag Scratch onto the road. (as shown).

**4.** Click on the **yellow trigger block** category.



**5.** Drag the green flag from the **blocks palette** to the **programming area**



Drag from block palette to programming area

**6.** Click on the **blue motion block** category



**7.** Drag the forward block from the **blocks palette** to the **programming area** and snap it to the green flag block
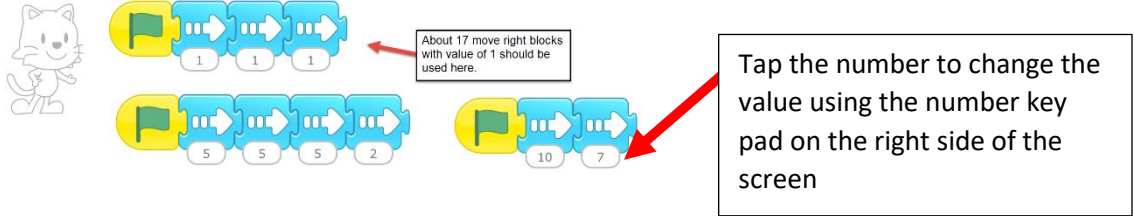


Drag forward blocks from the palette area to the programming area and snap them together.

**8.** Tap the green flag to test your code.

**9.** Didn't make it across? Reset your character to its starting point. Tap [icon] at the top of the screen or just drag Scratch back to the beginning.

**10.** Add more forward blocks to try again. Counting by 1's.

**11.** Try changing the value inside the forward block to 5. How many forward blocks do you need?

**12.** Try changing the value inside the forward block to 10. How many forward blocks do you need?



About 17 move right blocks with value of 1 should be used here.

Tap the number to change the value using the number key pad on the right side of the screen

## Extension

1. Choose a different background scene. i.e.: Classroom Scene
2. Create a sequence of code for Scratch to reach the Globe without climbing over chairs and tables.



More scenes to try that include up and down movements.