



## Lesson 6: Numbers and Repeating Sequences

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#### Summary

Through various interactive activities, students will learn about changing the numbers on motion blocks and how to use the repeat and repeat forever blocks. They will use each of these blocks in ScratchJr projects that they build along with their teacher and class.

<b>Objectives</b> <i>Students will learn that ...</i>	<b>Objectives</b> <i>Students will be able to...</i>
<ul style="list-style-type: none"><li>Numbers can be used on motion blocks</li><li>Numbers can reduce the number of blocks needed</li><li>Programs can be repeated for a specified number of times</li><li>Programs can be repeated forever</li></ul>	<ul style="list-style-type: none"><li>Use numbers on motion blocks to reduce the number of blocks needed</li><li>Use the repeat and repeat forever blocks to make a program repeat</li></ul>

#### New Programming Blocks

- Repeat
- Repeat forever



#### Schedule

##### Review (2 minutes):

- What was your favorite part of our last lesson? What did you learn from it?
- What does the speed block do? What color is it?
- If you want to program more than one character at once, what block do you need to use?

**Why numbers? (10 minutes):** The teacher should ask for a student volunteer. Once a volunteer is chosen, the teacher should instruct the student privately to listen to the directions s/he gives, and jump the wrong number of times. For example, s/he should say to the student, “I want you to jump, jump, jump, jump, jump, jump, jump.” The student should then jump the wrong number of times. The teacher should repeat the directions, and the student should again jump the wrong number of times. After doing this, the teacher should ask the class how this instruction could be clearer (e.g. by saying, “I want you to jump seven times). The teacher should then explain the concept of putting a number under a programming block, instead of putting that same block down multiple times. S/he should show how to do this on the iPad.

*Materials: iPad for teacher only.*





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**Why repeat? (8 minutes):** The teacher should ask for a student volunteer. S/he should say to the student, "I want you to jump, tap your head, and clap your hands." The teacher should say this instruction to the student multiple times, and the student should continue to follow these directions. The teacher should then ask the class how this instruction could be clearer. The teacher should then explain the concept of the repeat and repeat forever blocks, and show students how to use them on the ScratchJr application.

*Materials: iPad for teacher only.*

### Structured ScratchJr Programming (35 minutes):

1. The teacher should **hand out the iPads** and then build a program(s) on his/her iPad that includes putting numbers under motion blocks and repeat blocks. Students must then follow along and build the program(s) the teacher made **(10 minutes)**.
2. The students should then build their own program where they place numbers under the blocks **(5 minutes)**.
3. The students should then build their own program where they use the repeat or repeat forever blocks **(10 minutes)**.
4. Have the students place the Scratch cat and a second character at approximately the same height on the screen. The students should then build two different programs with the minimum number of blocks for the Scratch cat to move over to the other character: one program will use a number under the move block, and the other program will use the repeat block. Make sure students understand that they should not use more than one move block in this exercise. **(10 minutes)**.



**Wrap Up (5 minutes):** Make sure that students save their programs. Collect iPads.

