

LESSON 3

Loops in Scratch

40 minutes

Strand 1: Introducing computer science

Built in Scratch

Outcome 1.7

WHAT THIS LESSON DOES

Students use PRIMM to build a Pattern Creator in Scratch, replacing repeated move and turn blocks with a loop and explaining why a loop is the better approach.

CURRICULUM OUTCOMES

Outcome	What the specification asks for
1.7	discuss and implement core features of structured programming languages, including variables, operators, loops, decisions, assignment and modules

WHAT STUDENTS SHOULD BE ABLE TO DO

- Use a loop to repeat actions (LO 1.7)
- Explain why a loop is better than copying blocks (LO 1.7)

BEFORE THE BELL

- Have the class logged in to Scratch at scratch.mit.edu, on their own accounts or the class account, before the lesson starts; they create the new project themselves in step 3.
- Open the Scratch editor on the board so you can model the first blocks before pairs work independently.
- Check that students can add extensions and create variables, and have a sample Pattern Creator project ready to show if the room stalls.

WHAT YOU NEED

Item	Qty	Per	If you do not have it
tablet or laptop with Scratch	1	pair	run the lesson on the IWB with students taking turns

Loops in Scratch

HOW THE LESSON RUNS

4 min	introduction	Start: what we're building
2 min	content	Why use a loop?
2 min	content	Create a new Scratch project
2 min	content	Add the Ball sprite
3 min	content	Add the Pen Extension
3 min	content	Draw a circle
2 min	content	Create some variables
3 min	content	Use the steps and degrees
2 min	content	Change the degrees
3 min	content	Add some colour
4 min	content	Change the pen size
2 min	content	Play around
2 min	content	Wrap up
3 min	content	Make sense: what worked, what broke
2 min	content	Reflect
1 min	summary	What you covered

TEACHING MOVES

- Model the first green-flag stack on the board, then pause so pairs finish each step before you move on.
- When the repeat until loop appears, ask why one loop is better than stacking the same move and turn blocks many times.
- Have students try the degrees slider only after the straight-line version works, so they see the spiral as a change in the loop values.
- Circulate during Play around and name pattern recognition aloud: same loop, different slider values, new drawings.
- If you are running short: cut Play around (step 12) and shorten the colour and pen-size steps to a demonstration on the board. Keep the full time for Make sense: what worked, what broke and for Reflect, because explaining why a loop beats copying blocks is what the lesson is for, and it only happens in the talk.

WHAT TO WATCH FOR

- Pen stays up or erase all is missing, so nothing appears: check pen down is after erase all and before the loop.
- Steps variable never changes, so the sprite sits still or draws a tiny mark: confirm change steps by 1 is inside the repeat until block.
- Degrees or size slider not visible on the stage: check the variable is ticked in the toolbox and set as a slider in step 7, and start degrees at a sensible value such as 20.

DIFFERENTIATION

- Support: Provide a printed block order for the green-flag stack and sit with pairs while they place only the loop first.
- Extension: Challenge students to try more degree and size combinations, or to restart from the centre with a new colour each run.
- Extension: Ask stronger pairs to explain to the class where else a loop would save repeated blocks in a game or animation they already know.