

LESSON 37

Variables, input and output in Python

40 minutes

Strand 3: Coding at the next level

Built in Python

Outcome 3.1

WHAT THIS LESSON DOES

Students use PRIMM to build an interactive higher or lower game in Python on the micro:bit, practising variables, input and output.

CURRICULUM OUTCOMES

Outcome	What the specification asks for
3.1	creatively design and write code for short programming tasks to demonstrate the use of operators for assignment, arithmetic, comparison, and Boolean combinations

WHAT STUDENTS SHOULD BE ABLE TO DO

- Use variables, input and output in Python (LO 3.1)

BEFORE THE BELL

- Students logged in to the platform with Python (micro:bit Python editor) ready to open
- micro:bits available and paired where you plan to flash and run on hardware; otherwise use the on-screen simulator
- Model the editor layout on the board so students can find the code area, run control and display

WHAT YOU NEED

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

Variables, input and output in Python

HOW THE LESSON RUNS

4 min	introduction	Start: what we're building
2 min	content	The plan: build a higher or lower game
2 min	content	What are Variables?
2 min	content	Declaring and Assigning Variables
2 min	content	Variable Types
2 min	content	Changing Variable Values
2 min	content	Naming Conventions
2 min	content	Create a game
2 min	content	Importing Libraries
2 min	content	Initializing Variables
4 min	content	Creating the Game Loop
6 min	content	Evaluating the Guess
2 min	content	Full Code
3 min	content	Make sense: what worked, what broke
2 min	content	Reflect
1 min	summary	What you covered

TEACHING MOVES

- Keep the early variable steps brisk; the learning sticks when students see those ideas used in the game loop
- Model one full pass of the outer loop on the board before students add the guess checks, naming the variable that holds the current number and the one that holds the guess
- When a pair finishes early, ask them to add another input and a matching response, so that the work they do on their own still practises variables, input and output rather than drifting into something unrelated
- Circulate during the nested wait-for-button section; that is where most pairs need a quick prompt rather than a full reteach

WHAT TO WATCH FOR

- Variable name mistyped or capitalised differently later in the program, so the value never updates: point students at the exact spelling of the first assignment
- Guess stays empty because the button press is checked only once: remind them the wait sits inside a loop until a button sets the guess
- Comparison of higher or lower uses the wrong variable or the wrong direction: walk through one concrete example with two sample numbers before they re-run

DIFFERENTIATION

- Support: supply a short checklist of the variable names used in this build and let pairs tick each one as they add it
- Extension: add another input (for example a third button action or a second prompt) and a clear on-screen response
- Extension: keep a simple score variable and update it on a correct guess