

Number patterns with the counter

**Lessons:** 1

**Programming languages:** MakeCode

**Target age:** 7-11 yrs

**Subjects & topics:**

* Mathematics: Number patterns

# Lesson details

Students can use the BBC micro:bit to represent their given rule as an algorithm and test the pattern results.

Students can modify an existing program to confirm their understanding of odd and even numbers in the results of a given rule.

## Overall key learning

Learning objectives are at three different levels:

* **Mild** - I can test number patterns that follow a given rule using the micro:bit counter.
* **Medium** - I can modify my own counter program to test number patterns that follow a given rule.
* **Spicy** - I can create my own counter program to test number patterns that follow a given rule.

## Additional skills

# Curriculum links

## CA CCSS Standards

#### Operations and Algebraic Thinking: Generate and Analyze Patterns

4.OA.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.

For example, given the rule “Add 3” and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.

## CA CS Standards

* 3-5.AP.11 Create programs that use variables to store and modify data. (P5.2)
* 3-5.AP.12 Create programs that include events, loops, and conditionals. (P5.2)
* 3-5.CS.2 Demonstrate how computer hardware and software work together as a system to accomplish tasks. (P4.4)
* 3-5.CS.3 Determine potential solutions to solve simple hardware and software problems using common troubleshooting strategies. (P6.2)
* 3-5.AP.14 Create programs by incorporating smaller portions of existing programs, to develop something new or add more advanced features. (P4.2, P5.3)
* 3-5.AP.17 Test and debug a program or algorithm to ensure it accomplishes the intended task. (P6.2)

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