Lesson: Introduction to Flowcharts

**Big Picture**

A flowchart is a graphical representation of an algorithm. Flowcharts play a vital role in solving a problem and are quite helpful in understanding the logic of complicated and lengthy problems. Once the flowchart is drawn, it becomes easy to translate the solution to a program, recipe, or other form. This lesson will describe why and how we use flowcharts to represent algorithms for computer programs.

**Objectives**

Students will be able to:

* Describe why flowcharts are useful in designing algorithms that can then be translated into computer programs
* Demonstrate the use a flowchart to represent an algorithm and then use the flowchart to build a corresponding micro:bit program

**Alabama Standards Alignment**

Computational Thinker #3

Create an algorithm using a programming language that includes the use of sequencing, selections, or iterations.

**Vocabulary and Concepts**

Flowchart - a diagram of the sequence of movements or actions of people or things involved in a complex system or activity

Algorithm - is a step-by-step set of instructions designed to carry out a task (on a computer) that always works. Algorithms have 5 properties - Input, Output, Effectiveness, Definiteness, and Finiteness.

Problem solving - the process of finding solutions to difficult or complex issues

**Agenda**

Getting started (15 mins)

* The teacher will present the material covered in the student worksheet document to explain the concept of a flowchart and the different symbols and guidelines used when drawing a flowchart.

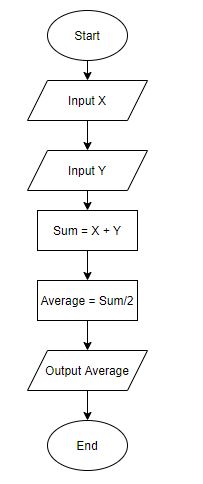
Activity (25 mins)

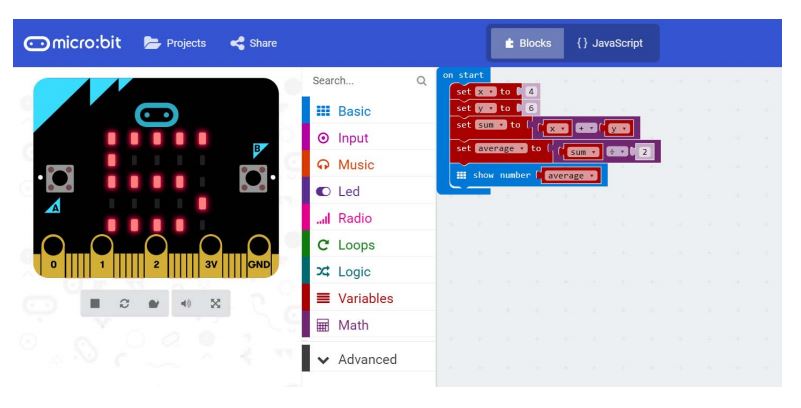
* The teacher will work with the students in class to complete the flowchart used to represent the algorithm for calculating the average of two numbers.
* The teacher will ask students to implement (write) the program for the flowchart above (calculating the average of two numbers) using the micro:bit. The micro:bit should display the average of the two numbers on the LED display.

Wrap up (5 mins)

* The teacher will then present the solutions to both the flowchart as well as the program.

**Introduction Lab solutions**

****

****