Microbit basics:

CS Standard: 5.AP.V.01 USING grade-appropriate content and complexity, CREATE programs that USE variables to STORE and MODIFY data. 5.AP.C. 01 Using grade-appropriate content and complexity, create programs that include sequences, events, loops, and conditionals, both individually and collaboratively.

Lesson Targets:

- I can create a program that use variable to store and modify data.
- I can create programs that include sequences, events, loops and conditionals individually.
- I can create programs that include sequences, events, loops and conditionals collaboratively.

Teaching Strategy: I am using the PRIMM (Predict, Run, Investigate, Modify, Make) strategy. This strategy breaks down skills for students who are learning to program by allowing them to understand the different controls in programming and how they are used.

1. I will play this video to introduce students to the basics of what a microbit is https://www.youtube.com/watch?time_continue=2&v=u2u7UJSRuko&embeds_euri=https%3A%2F%2Fmicrobit.org%2F&feature=emb_title. After the video we will discuss some of the things they learned.

2. Students will go to microbit.com and we will begin to learn about the coding aspects using the makecode software. Students will trash the forever block and make sure the simulator is off before beginning to explore.

- Students will insert a show LED block, from the basics list, into the on start block and have students make a shape in the show led block.
- Students will predict what they think will happen once the run the code. Students will run their code.
- Students will turn off the simulator and change the show led to show string block, from the basics list, and have them type their first name in the string. Students will predict and run the program.
- Students will compare the 2 blocks.
- We will then trash the program and select on button pressed, on logo, and on shake from the input list.
- We will insert a show icon block into the on button A, a show string in the on logo block, and show icon (change picture) in the on shake block. We will predict and run the program.
- We will create a time variable to change emotions based on how long between inputs.
- Students will notice nothing happens unless you press the button, the logo or shake the microbit.
- Students can then investigate different blocks and controls for the rest of the time.
- Once students have investigated the online simulator we will attach our microbit and download their code. They will notice that there is an error on their microbit and their code will not run. Due to the fact these are not the newest version of Microbits, they cannot use sound or the logo button.

    - Students will then create emotions that change on the microbit as they push buttons, tilt, turn upside down, etc. Students will then modify their code and make emotions for their microbit. They will need to create 7 different emotions using the various inputs on their microbit.
- Students will then learn to add to their sequences conditionals and loops by choosing a game to create from the microbit menu and then modifying the code to make it their own.
- Students will share their programs with each other in small groups. They will then journal about their microbit experience.

3. Evaluation: I collected formative data through observation. These are new skills for students, and we will need time to predict, run, and investigate programming. I will differentiate help through one on one or partner help. Students will show more differentiation while modifying and making their own expressions. Students will be assessed on how they modified and existing code to create their own program. Students will then journal about the coding experience.