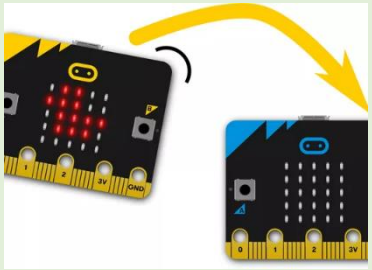
Steering Test #1 (Rover)



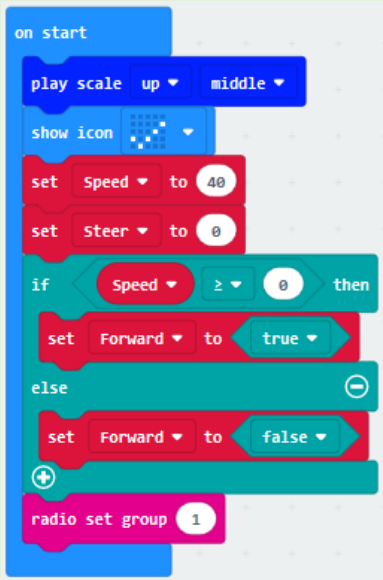
Objectives:

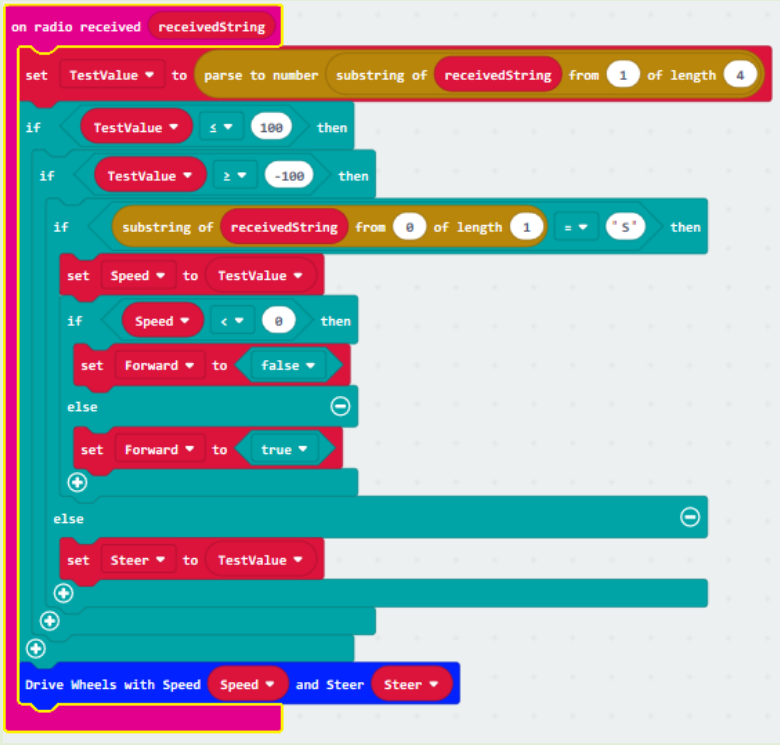
Program the rover send and receive radio signals and communicate with a second micro:bit to create a remote control for the rover.

1. Open the MakeCode Editor. Click “import” o the projects page.
2. Upload the link or the URL of the Propulsion Test 2 activity. You will modify this code for the Steering Test.
3. Rename the project: Steering Test 1
4. Follow the **what** and **how** directions.

Did You Know?

A second micro:bit can be used as a remote control to allow for controlled steering of the rover. The micro:bit uses radio waves to communicate and send messages to other micro:bits. In this activity, the rover will be programed to receive messages from the remote control micro:bit. Use the coding below to program the rover and the Steering Test 1 (Remote Control) card to program the second micro:bit.

What am I doing?	How will I do it?
Set up the rover micro:bit to send out radio waves to a set group. • Modify the on start block from the Propulsion Test 2 program. • In the propulsion test, the rover would not move until the power/speed was set at 40%. Therefore, by changing the “speed” variable to 40, the rover will move at 40% on start. • Set your program up to send and receive messages on the radio set group using your rover identification flag #. If your flag # is 8 you will use radio set group 8. Setting the rover and remote control to the same group allows them to use the same radio frequency to communicate.	**Modify the ON START block:** 1. Change the set “Speed” to 40 2. Add a radio set group block 3. Change the zero (0) to you ID number on your rover flag 

The forever loop will stay the same for the receiving micro:bit used in the rover.	**No changes to the forever block.** (Use the same forever loop that was used in the Propulsion Test 2 code)
Create code to allow the received radio messages from another micro:bit to control the speed of the rover. • Create a new variable called TestValue and set it to the number from the substring of receivedString from 1 to 4. When the radio receives a string "S-40", this should mean "set speed to -40". • If the TestValue is between 100 and -100, and if the first character of the receivedString is "S", then the Speed will be set to Test Value. • Otherwise the Steer will be set to TestValue when the radio receives a string with "T 100" which will mean to "set Steer to 100"	**Use the on radio received block (receivedString):** Radio > on radio received (receivedString) 1. Create a variable called " TestValue" 2. Set "TestValue" to parse to number Advanced > Text > parse to number "123" a. Add substring of (receivedString) from 0 of length 4 inside the parse to number block Advanced > Text > substring of " " from 0 to 10 (change 10 to 4) b. Duplicate the (receivedString) from the on radio received block and place in the substring of block 3. Add four if/then blocks: a. if "TestValue" is less than or equal to (≤) 100 then b. if "TestValue" is greater than or equal (≥) -100 then c. if " substring of (receivedString) from 0 to of length 4 is equal (=) "S"then d. set "Speed" to "TestValue" e. if "Speed" is less than (<) zero (0) f. set "Forward" to false g. else set "forward" to true h. else: set "Steer" to "TestValue" 4. Add a Drive Wheels With block a. Set speed to "Speed" and steer to "Steer" 
Download this code to the micro"bit and place this into the rover and test.	1. Turn the rover on. 2. Does the rover move? Press button A and B - remember the speed test functionality. **3.** Does it move backward? Does it turn?