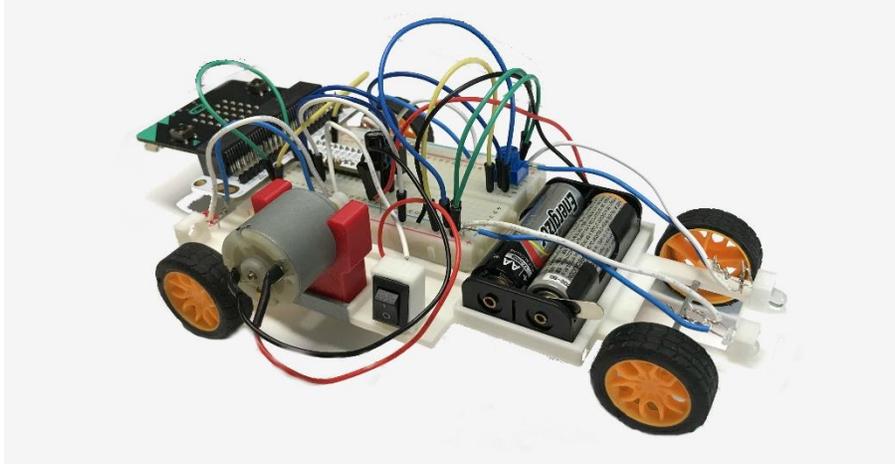


# Micro Kart Setup

Teacher Handout for ITEEA Conference 2020

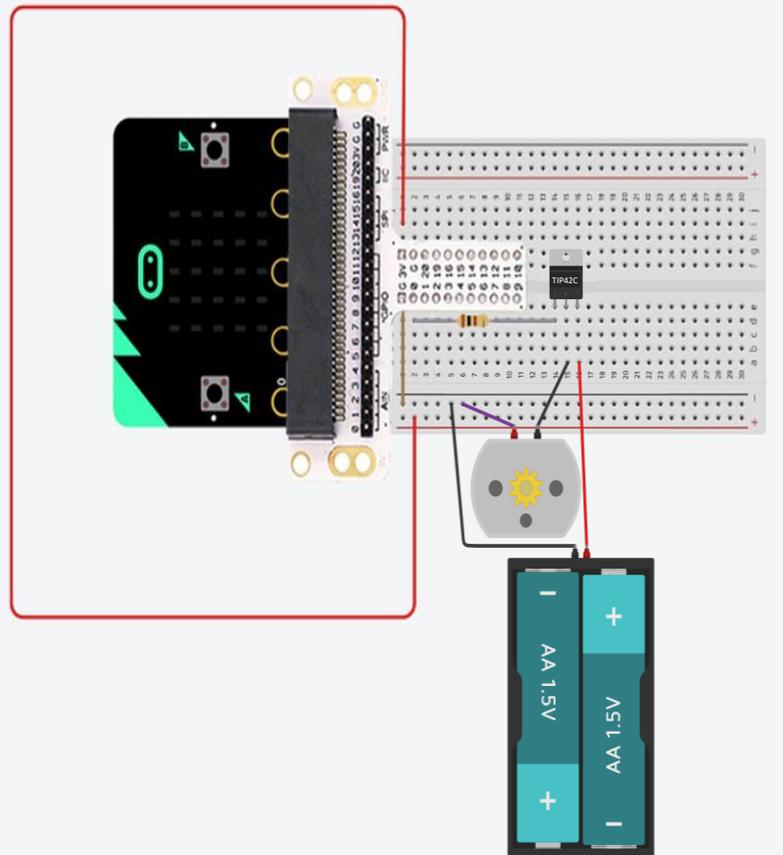


Images from the INMAC Electric Vehicle Curriculum project. DO NOT copy.

## 1

### STEPS

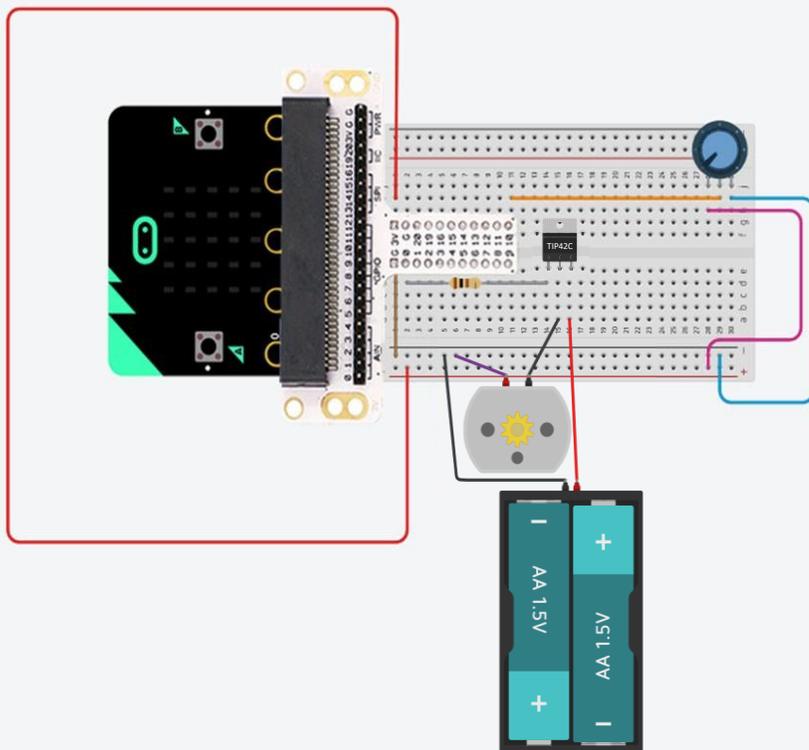
1. Attach Micro:bit to breadboard.
2. Add brown wire (can be any color) from the G PIN of Micro:bit to main negative (-) track in breadboard.
3. Add red wire (can be any color) from 3V on the Micro:bit (column I row 1) to main positive (+) track on the opposite side of the Micro:bit.
4. Add PNP transistor (TIP 42C) in column E rows 14, 15, and 16.
5. Add 100-ohm resistor (stripe colors in order: red, brown, red, gold) in PIN 0 and in column D row 14.
6. Add motor to main negative (-) track (purple wire in photo at right) and column A row 15 (using black wire in photo at right).
7. Add battery pack (black negative wire) to main negative (-) track and (red positive wire to) column A row 16.



## 2

## STEPS

1. Add potentiometer to columns J and I in rows 28, 29, 30.
2. Add orange wire (can be any color) from column H row 29 to PIN 10.
3. Add blue wire (can be any color) to column H row 30 and the main negative (-) track on the opposite side.
4. Add purple wire (can be any color) to column H row 28 and the main positive (+) track on the opposite side.



Go to <https://makecode.microbit.org/#editor> and create the program (shown below). This program will measure the potentiometer position and adjust motor speed accordingly.

1. Go to "Variables." Click on "Make a Variable" and name it "Potentiometer Value." Click "Ok."
2. Add "Set Potentiometer Value to 0" block inside the "Forever" blue block.
3. Click on "Advanced" drop down in the menu.
4. Click on "Pins." Drag the rounded "Analog read pin P0" block into the pink "Set Potentiometer value" block where the white number is. Change P0 to P10 using the arrow in the "Analog read pin" box.
5. From "Pins" menu, add "Analog set period pin..." block underneath previous "Set Potentiometer value" block in sequence. Change value from 20000 to 265 by clicking the number once in the "Forever" sequence.
6. From "Pins" menu, also add "Analog write pin..." block beneath the "Analog set period pin..." block in sequence.
7. From "Variables" menu, click and drag the rounded "Potentiometer Value" box over the white section of the "analog write pin" box in the main sequence.



Send the program to the Micro:bit. Connect the Micro:bit to the computer and hit save on the file name. This will download the file (as well as save it for later). The downloaded file can be transferred to the Micro:bit by drag and drop (the Micro:bit behaves like a flashdrive).

Get curriculum access at this link or scan the QR code: [tinyurl.com/INmacEVGP](https://tinyurl.com/INmacEVGP)

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