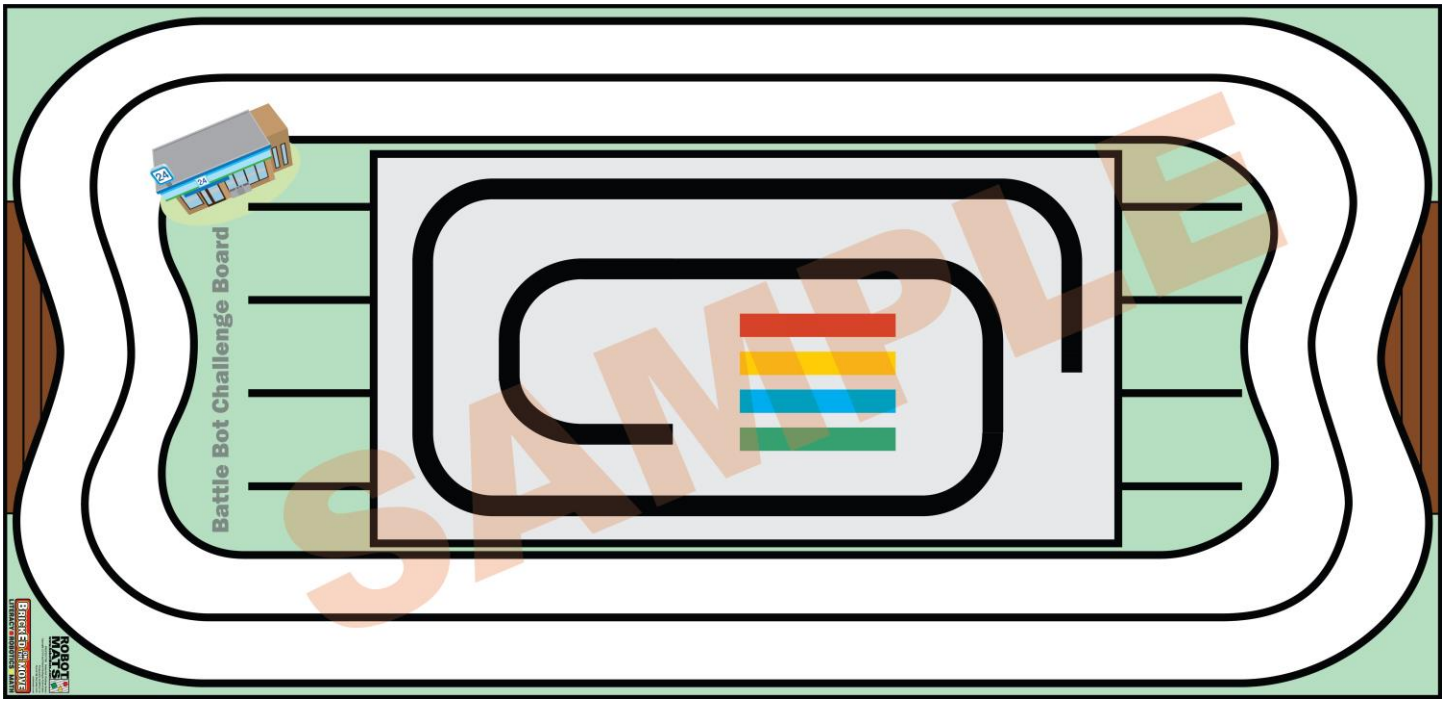
Robot Wars Mat Curriculum Sample 1

This sample is provided to give you some guidance in developing your own challenges.

The purpose of this mat is to allow students to practice following a line, using a color sensor, and racing.

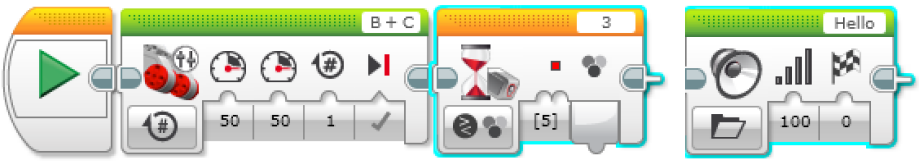


Task 1: What Color do you see?

Purpose: To use the sound block, color sensor, wait for color block, and change color setting

1. Attach the color sensor to the front of the bot facing downward and close to the mat.
2. Place the bot on the roadway facing the color strips.
3. Code the robot to move forward and stop at each color using the color sensor and wait for change in color blocks.
4. Make the bot say the color.
5. Once the bot finishes the color strips it should travel around the roadway to the right and end up at the starting place.

Sample blocks to use:



Task 2: Follow the Black Line

Purpose: To use the color sensor in the reflected light mode

1. Attach the color sensor to the front of the bot facing downward and close to the mat.
2. Place the bot inside the box at the beginning of the block line with the sensor on the line.
3. Use reflected light on the color sensor to stay on the line
4. Follow the line to the end.
5. End up on top of the color strips.

Sample Blocks to use:

Task 3: Race Me!

Purpose: To use move blocks to investigate time and precision.

1. Place the bot in one of the bays on either end of the track. (All students should use the same location as the start)
2. On GO! Move the bot onto the track and move as fast as you can around the track for a lap. Time your race to the nearest hundredth of a second. You must stay within all lines to stay in the race!
3. Each student races and then compare the times to get winners.

Sample Blocks to try:

- Use line following code (this is hard!) Here are three resources…
  - http://www.legoengineering.com/inside-a-two-step-simple-line-follower
  - https://education.lego.com/en-us/lessons/mindstorms-ev3/line-detection
  - https://sites.google.com/site/gask3t/lego-ev3/my-projects/a-better-line-follower

Task 4: Battle Bots: The Fight is On!

Purpose: To explore force as a push and pull, to use engineering design to build onto the bot to accomplish a task, to utilize move blocks.

This one requires some additional building on the bot. Students will need to add a contraption to help move the other bot out of the arena. Students may want to use an ultrasonic sensor to measure closeness with the medium motor for the attachment movement.

1. Place two opposing bots on each side of the inside square in one of the bays.
2. On GO! The two bots enter the ring. Each one tries to push the other outside the ring.
3. The one crossing the line on any side is out.
4. Each bot pair competes until there is only 1 Battle Bot left!

Sample Blocks to Try: