

# MINDSTORMS<sup>EV3</sup> PROGRAMMING CHALLENGE

I will issue a new challenge the first meeting of each month (2<sup>nd</sup> Tuesday). The challenges will get more difficult each month. Anyone who successfully completes the challenge at the following meeting will receive a reward. I will be available in the gym after school on the 3<sup>rd</sup> Tuesday for anyone who would like to test their program during our “off week”  
Below you will find a Beginner’s Challenge and an Intermediate Challenge. If you have used the robots before, you will be expected to do the Intermediate Challenge.

**We will use the same robot we had in our meeting. The robot has the following features:**

- Left wheel is assigned to port A
- Right wheel is assigned to port B
- There is a motor arm assigned to port C
- There is a color sensor in the center front assigned to port 1
- There is a touch sensor in the center front assigned to port 2

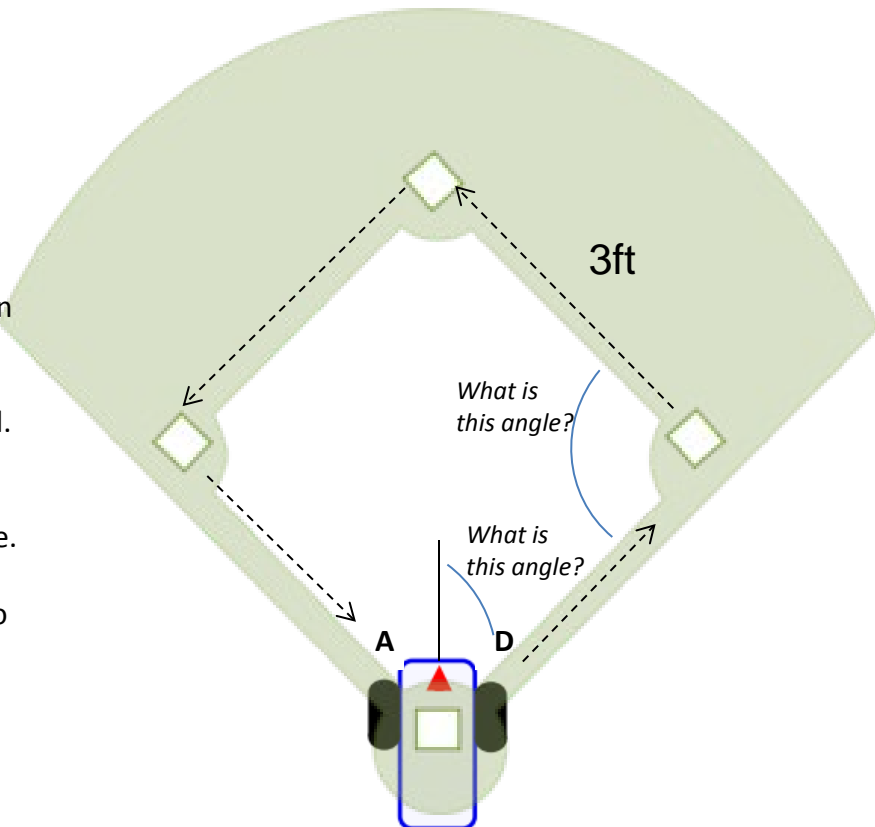


Diameter =  $2 \frac{3}{16}$  (2.1875) inches

## Beginner’s Challenge #1 – Scoring a Home Run

To complete this challenge, your robot must round all 3 bases and make it back to home.

- The distance between each of the plates is 3 ft.
- There are two angles involved: the initial turn to initiate your run to 1<sup>st</sup> and the angle between the bases.
- Bonus 1: Your robot gets a double and must wait at second. When the robot gets to second base, *wait* 30 seconds before continuing on to third and home. (Hint: use a yellow flow block)
- Bonus 2: Your robot is excited to get a home run. Put a smile on its face. (Hint, use a blue action block to *display*)



## Intermediate Challenge #1 – Shooting Free Throws

To complete this challenge, your robot must shoot a basket at both free throw lines. You will start at half court facing parallel to the free throw lines. You must go to the right free throw line and “shoot”, then go to the left line and “shoot”. You do not need to return to half court.

- The distance from half court to each free throw line is 3ft.
- You must be facing the “basket” to “shoot”
- To “shoot”, you must activate the arm on the robot, swinging an arm 90 deg from a 3:00 position forward to a 9:00 position. Return your arm to the 3:00 position for the next shot.
- Bonus: You will receive a bonus for using the black line (rather than distance) for your motor control. (There will be no other detectable markings on the floor.)

