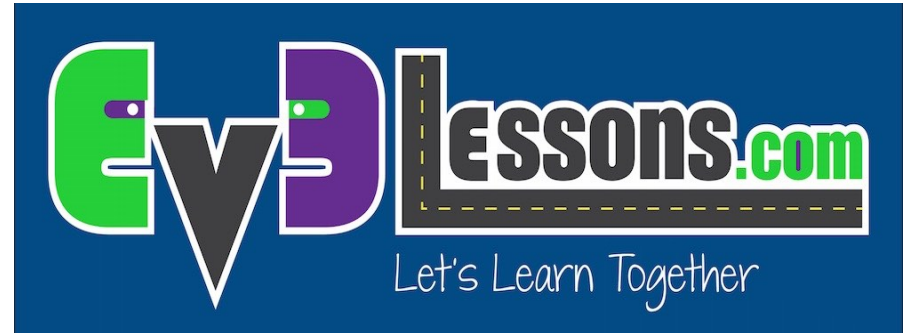
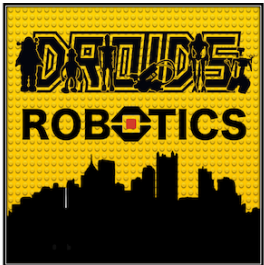


# BEGINNER EV3 PROGRAMMING LESSON



Topics Covered:  
Color Sensor



By: Droids Robotics

# LESSON OBJECTIVES

1. Learn how to use the Color Sensor
2. Learn about Coast and Brake

# WHAT IS A SENSOR?

- A sensor lets an EV3 program measure and collect data about its surroundings
- The EV3 sensors include:
  - Color – measures color and darkness
  - Gyro – measures rotation of robot
  - Ultrasonic – measures distance to nearby surfaces
  - Touch – measures contact with surface
  - Infrared – measures IR remote's signals

*Our lessons will cover the 4 sensors in green.*



Image from: [http://www.ucalgary.ca/IOSTEM/files/IOSTEM/media\\_crop/44/public/sensors.jpg](http://www.ucalgary.ca/IOSTEM/files/IOSTEM/media_crop/44/public/sensors.jpg)

# WHAT IS THE COLOR SENSOR?

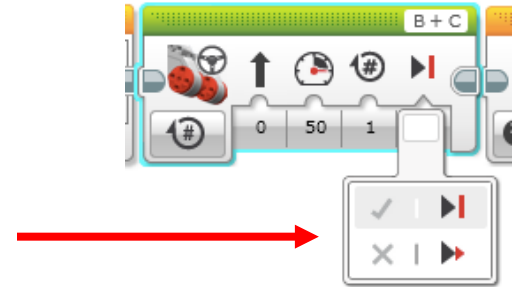
- What are they? Sensors that detect the intensity of light that enters it
- Three modes: Color, Reflected Light Intensity and Ambient Light Intensity
  - **Color Mode:** Recognizes 7 colors (black, brown, blue, green, yellow, red, white) and No Color
  - **Reflected Light:** Measures the intensity of the light reflected back from a lamp that emits a red light. (0=very dark and 100=very light)
  - **Ambient Light:** Measures the strength of the light that enters the sensor from the environment. (0=very dark and 100=very light)
- USES:
  - Move until a line
  - Follow a line



We will use COLOR MODE in this Lesson

# ANOTHER MOVE STEERING TIP: COAST OR BRAKE?

- Something more about the Move Steering Block
- You will notice you have an option to COAST or BRAKE
- Coast will make the motors keep moving. Brake makes the motors stop immediately.
- Which do you use to stop EXACTLY on a colored line?



# COLOR SENSOR CHALLENGE

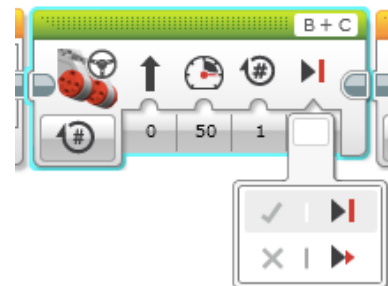
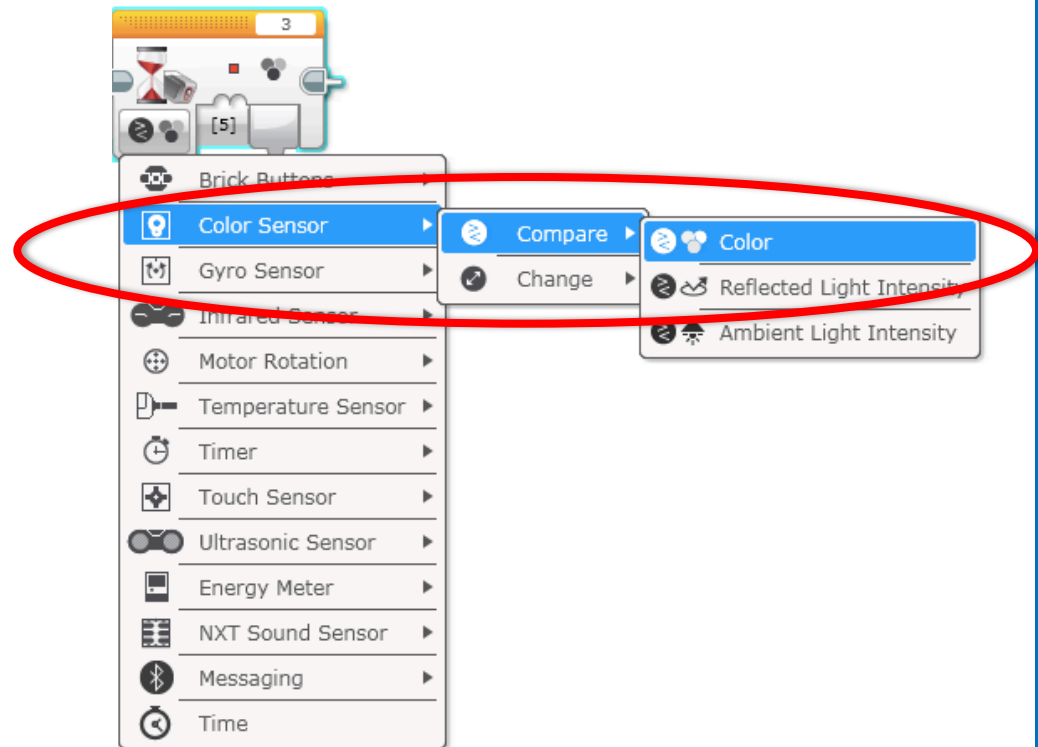
Make the robot move up to a green line using the color sensor?

**Step 1: Use Wait For Color**

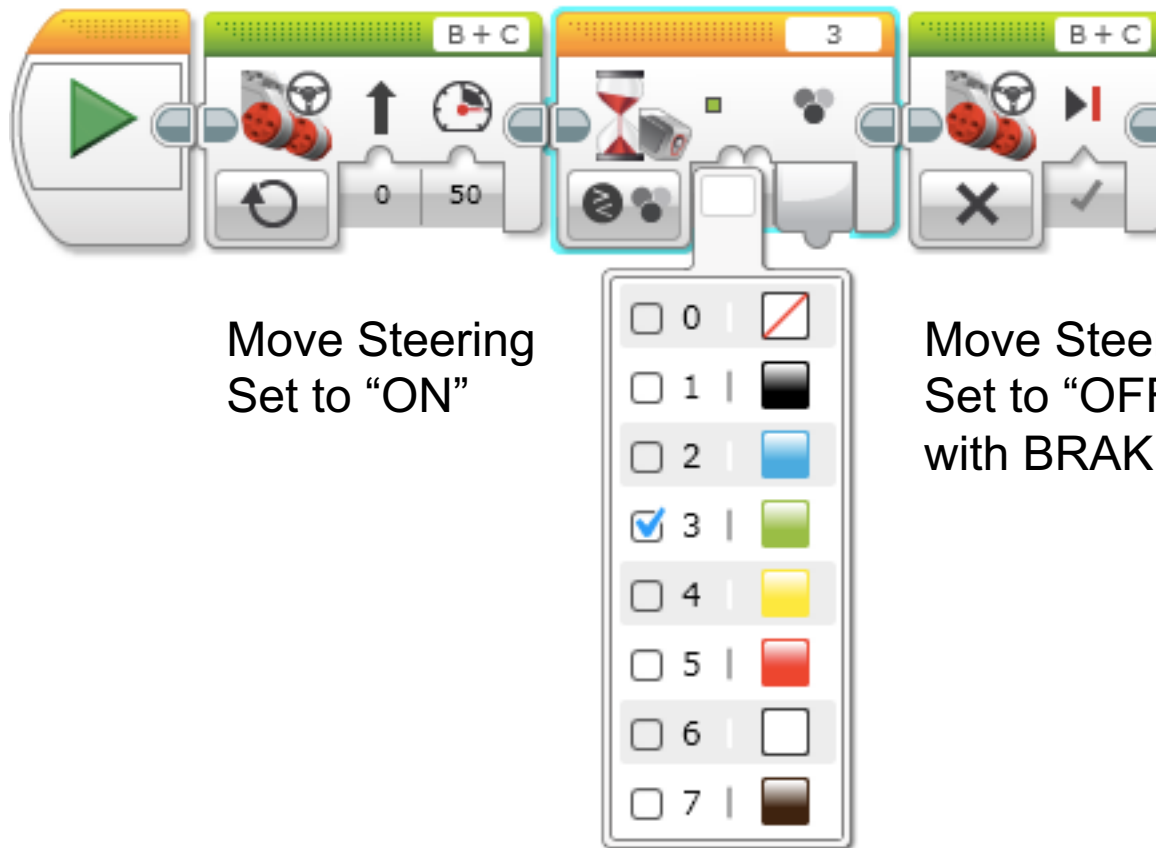
**Step 2: Use the color sensor in COLOR MODE**

**Step 3: Coast or Brake?**

Hint: You will use Move Steering (think about motor on and off) and Wait for “Color”



# COLOR SENSOR CHALLENGE SOLUTION



Wait until Color is Green (#3)

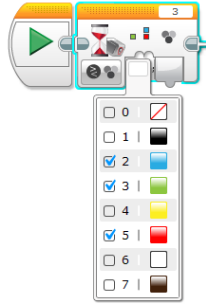
FINISH

START

# DISCUSSION GUIDE

**Can you look for more than one color with the color sensor?**

**Answer: Yes**



**What is the difference between COAST and BRAKE in a Move Steering Block?**

**Ans. Coast will allow your motors to spin freely after a move, but Brake will immediately stop it**



# CREDITS

- This tutorial was created by Sanjay Seshan and Arvind Seshan from Droids Robotics.
- More lessons are available at [www.ev3lessons.com](http://www.ev3lessons.com)
- Author's Email: [team@droidsrobotics.org](mailto:team@droidsrobotics.org)



This work is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-nc-sa/4.0/).