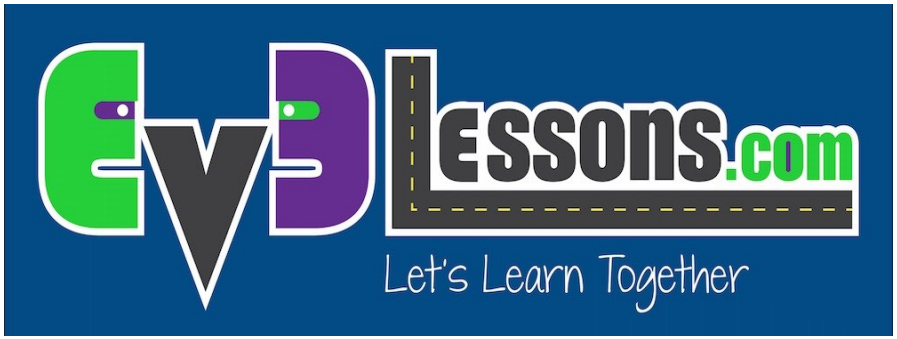
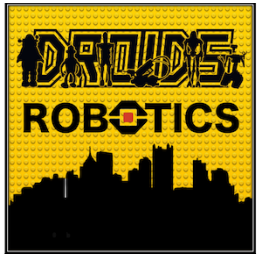
BEGINNER EV3 PROGRAMMING LESSON



Topics Covered:
Moving Straight



By: Droids Robotics

LESSON OBJECTIVES

1. Learn how to make your robot go forward and backwards
2. Learn how to use the Move Steering block
3. Learn how to read sensor values using Port View

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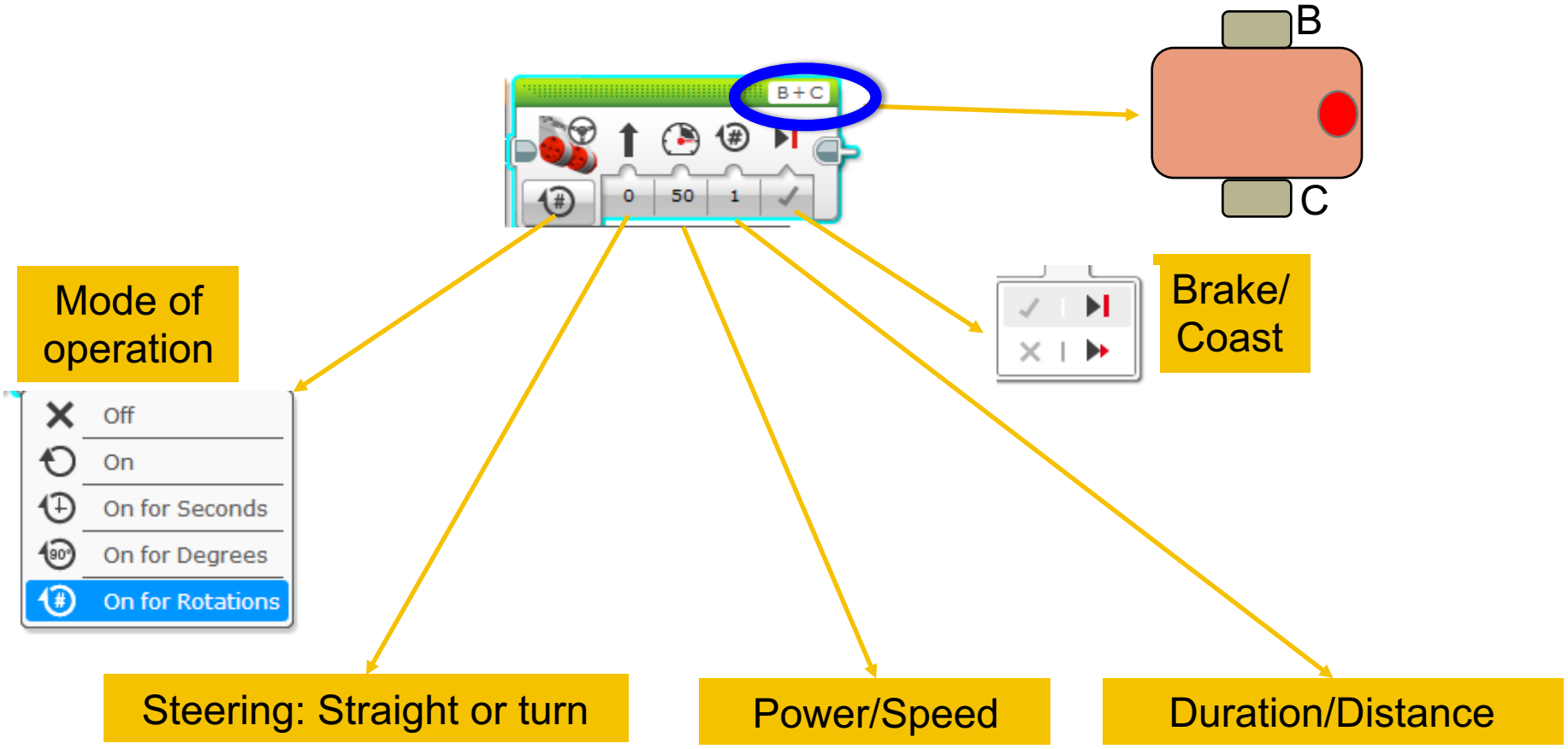
MOVE STEERING BLOCK



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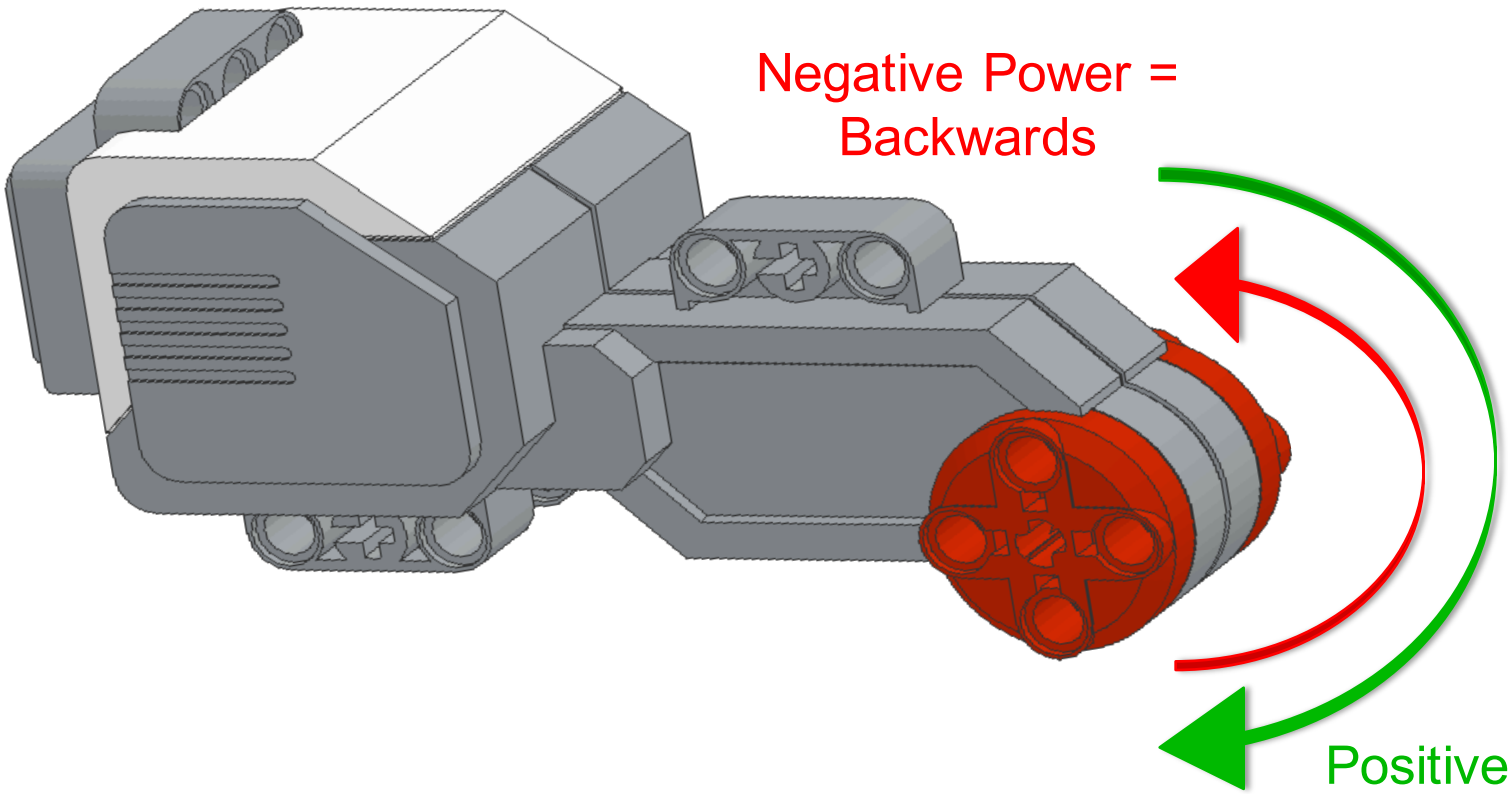
NEGATIVE & POSITIVE POWER: BACKWARD & FORWARD



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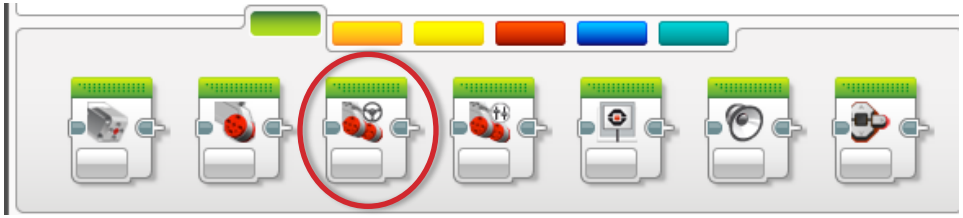
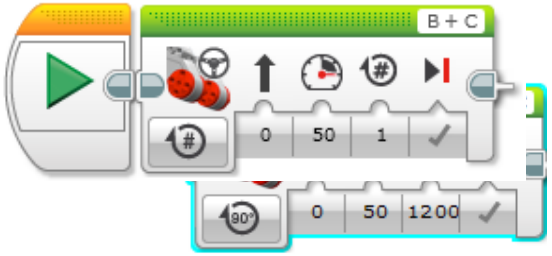
HOW DO YOU MOVE STRAIGHT?



STEP 1: Green Block Tab, Click and hold Move Steering and drag to programming area



STEP 2: Drop next to the Start Block (green arrow)
(See animation)

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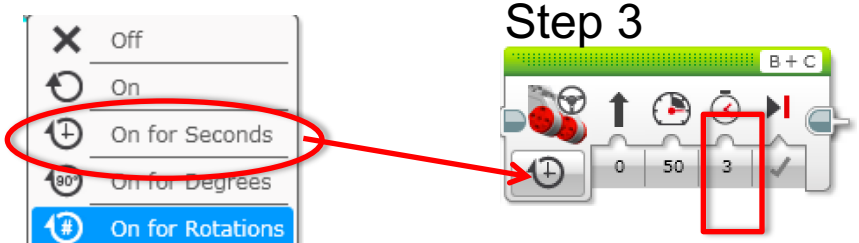
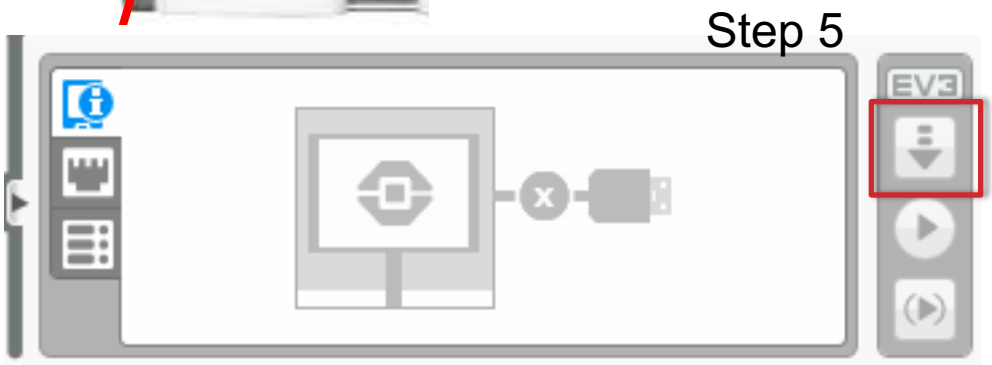
CHALLENGE 1: MOVE STRAIGHT (3 SECONDS)





STEP 1: Green Block Tab, Click and hold Move Steering and drag to programming area

STEP 2: Drop next to the Start Block (green arrow)

STEP 3: Select Options. Move “3 Seconds”

STEP 4: Connect USB cable to EV3 and Laptop.

STEP 5: Download to EV3

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TEACHER INSTRUCTIONS

- Split up class into groups as need
- Give each team a copy of the Move Straight Challenge Worksheet
- Challenge Details are on Slide 8
- Discussion Page Slide 9
- Challenge Solution on Slide 10
- A Better Way on Slide 11

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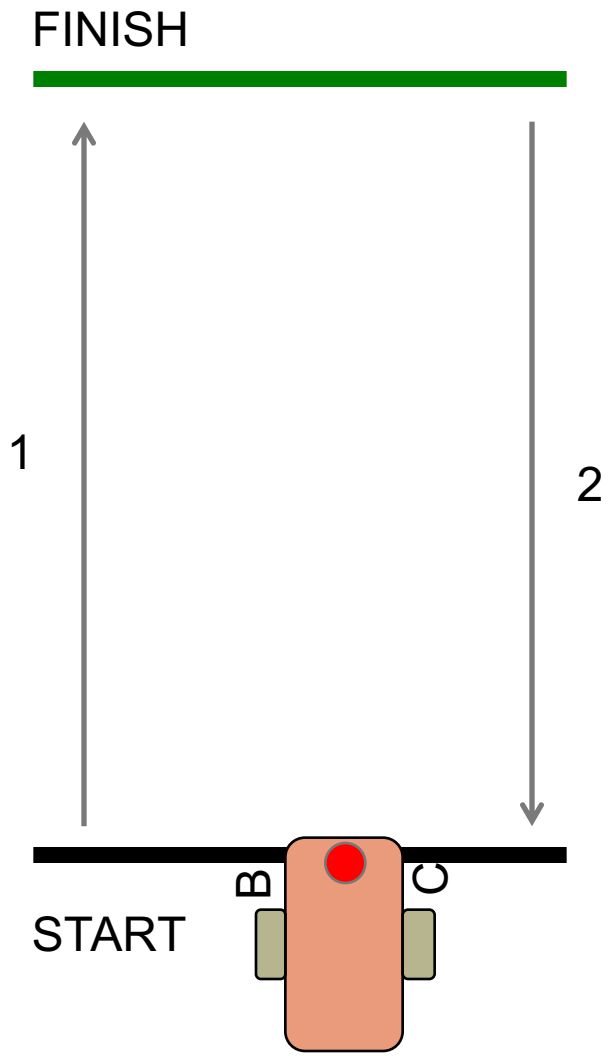
MOVE STRAIGHT: SECONDS VS. DEGREES VS. ROTATIONS

CHALLENGE: Move your robot forward from the start line to the finish line (1) and back to the start (2).

Try mode SECONDS, DEGREES or ROTATIONS and adjust duration/distance

Try different speeds



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MOVE STRAIGHT DISCUSSION

Did you guess and check a lot?

Yes. Programming with seconds, rotations and degrees using guess and check takes a lot of time and effort.

Did changing the speed matter?

Yes. When you move in seconds your speed will matter.

Do you think the wheel size will matter? Why?

Wheel size affects degrees/rotations.

Do you this the battery level will matter? Why?

When you move in seconds, battery levels change the power.

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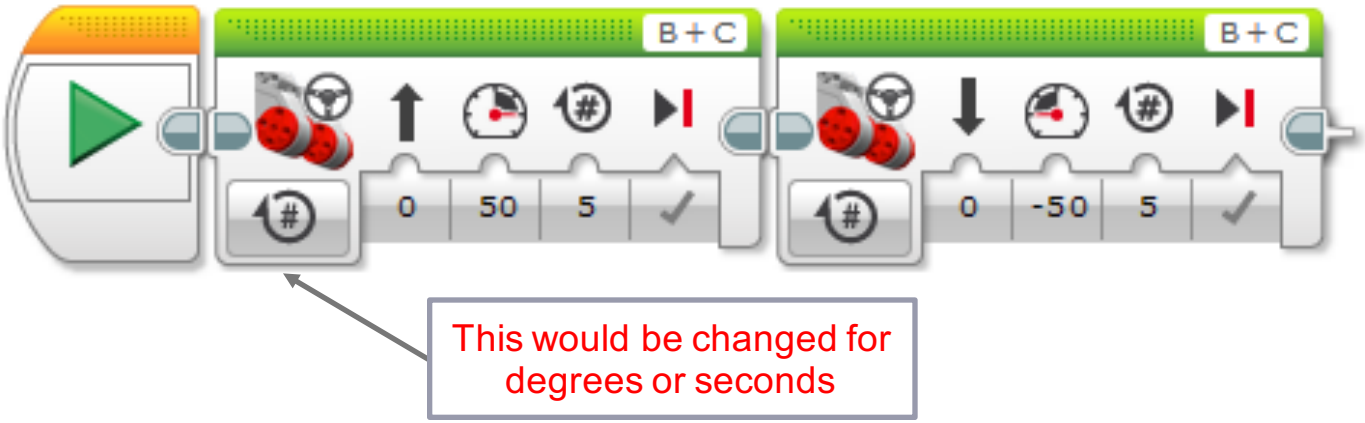
CHALLENGE SOLUTION



- **There is a better way (go to slide 11) to solve this challenge**

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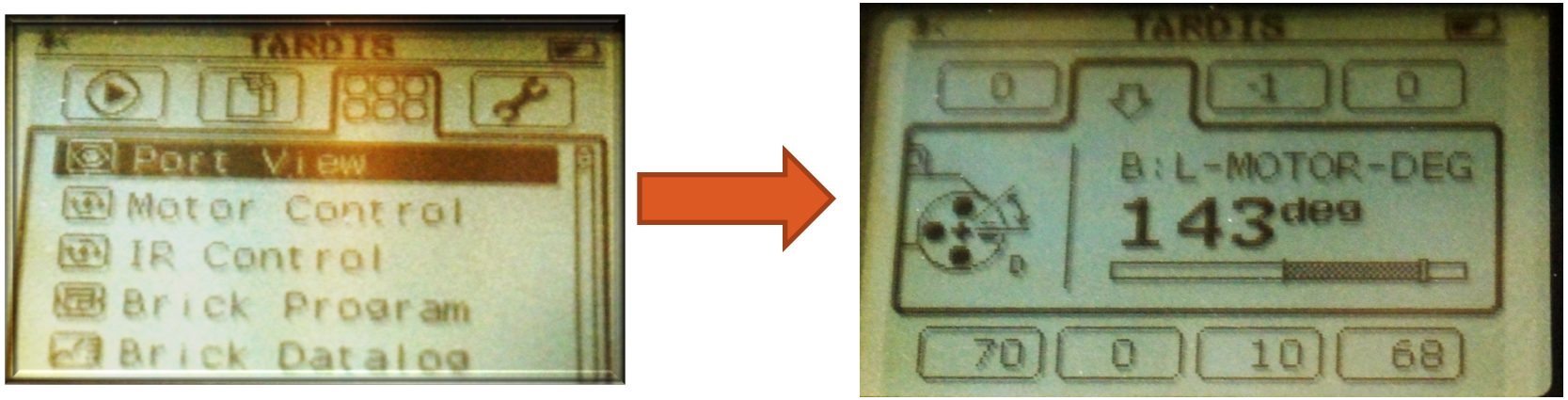
SOLUTION: USE PORT VIEW

Try "port view" on brick (on Brick Apps tab)

- Move your robot with your hand from your start line to your end line
- Read how many degrees your robot moved
- Use this number in the Move Steering Block to move the correct distance.



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CREDITS

- **This tutorial was created by Sanjay Seshan and Arvind Seshan from Droids Robotics.**
- **More lessons are available at www.ev3lessons.com**
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