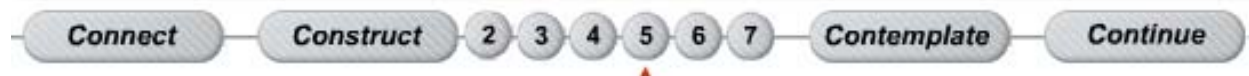


## Worksheet: Full Speed Ahead

### Introduction to Mobile Robotics > Full Speed Ahead

This worksheet is provided for reference only. Be sure that you follow the steps in the online directions, and answer the questions at the appropriate times. Fill out all your answers on a separate sheet of paper.

#### Construct



#### Observations:

1. What happened when you ran the program?
2. Which motor spun?
3. What direction did the motor spin?
4. Did the motor stop spinning on its own?
5. Is this the desired behavior yet?

#### Construct: Run Second Motor



#### Answer the following:

6. Why is the second motor command needed?

#### Construct: Stop the Robot



#### Answer the following:

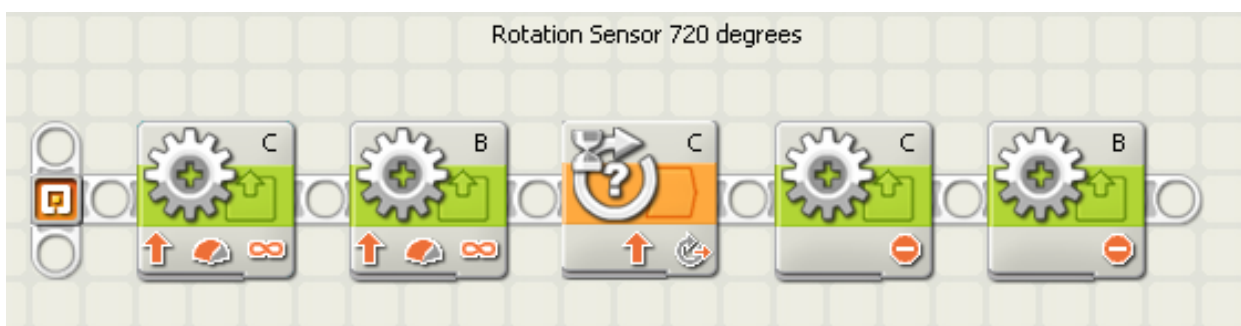
7. Why did the robot not stop at the right place before?

#### Contemplate



8. What is the difference between downloading a program and running a program? When do you need to do each one?
9. Which of the following determines the order in which blocks are run in the program? Circle one.
  - a. The order the blocks are placed on the workspace, regardless of where they are placed. The one you drop first runs first, etc.

- b. The order of blocks on the white Sequence beam. The program starts at the small NXT symbol, and follows the blocks in the order they are reached along the white beam.
  - c. There is an order of operations of blocks. The software will always make Motor command blocks run first, then Wait For blocks, then Motor stop blocks.
10. Write a brief one or two sentence explanation of what each block does in the program you wrote (also shown below).



First block:

Second block:

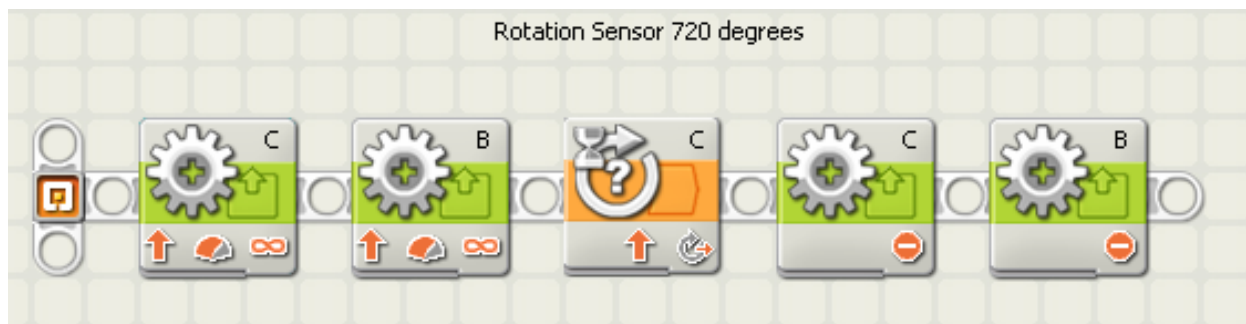
Third block:

Fourth block:

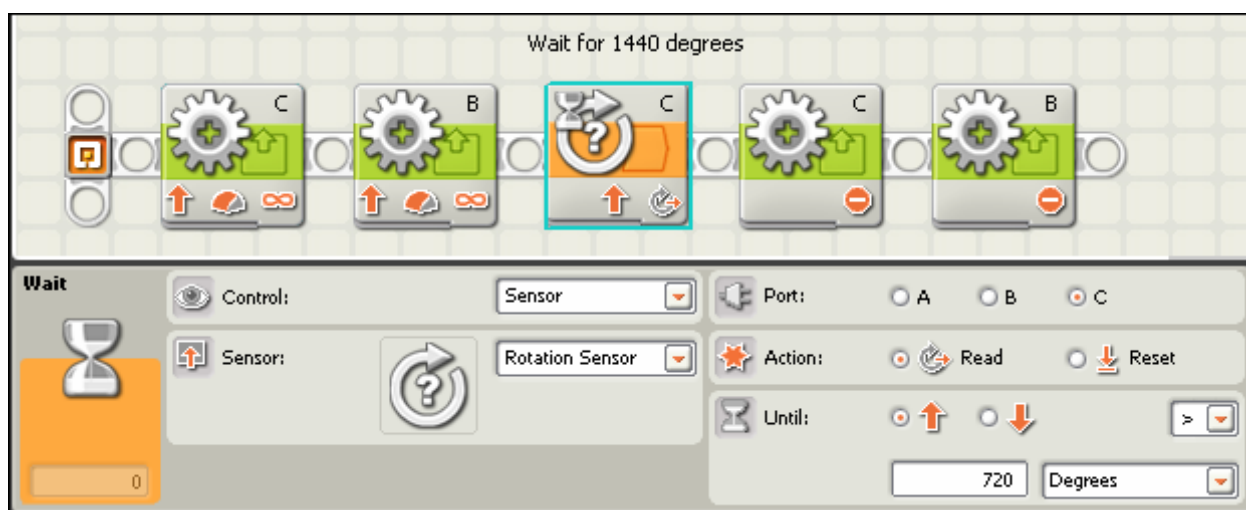
Fifth block:

11. Look at your program.
- i. Which icon or icons in the program controlled how far the robot went before stopping?
  - ii. Explain how you could change the program to make the robot go a longer or shorter distance.
  - iii. On a sheet of paper, sketch a new program that would make the robot go for twice the original distance. Make sure to include any comments or images that will identify the blocks and tell you what they do.
12. Describe the robot's new movement pattern if you moved the motor plug from Port B to Port A, but did not change the program. How would you then need to change the program to make the robot go forward again?

13. Describe the robot behavior that this program produces when run.



14. How far will the program shown below make the robot run? Look carefully, this is trickier than it seems!



**Continue: Full Speed Reverse**



Answer the following:

15. What program blocks are different between the *moving forward* and *moving backward* behaviors?

**Continue: There and Back (part 1)**

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Connect

Construct

Contemplate

Continue

2

3

**Observations:**

16. Did your robot perform both actions as expected? If not, what did it do instead?

**Continue: There and Back (part 2)**

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Connect

Construct

Contemplate

Continue

2

3

**Answer the following:**

17. Why did the rotation sensor need to be reset?

18. When do you need to do this in future programs?