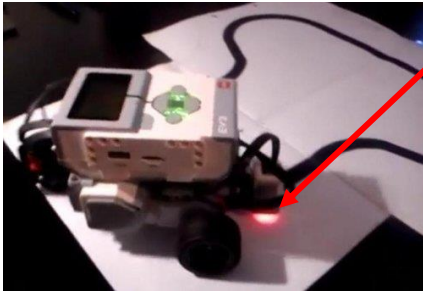


LEGO MINDSTORM

Following a line edge

Robot Setup

You can use almost any robot with turning capabilities.



Set your colour sensor on the front of your robot.

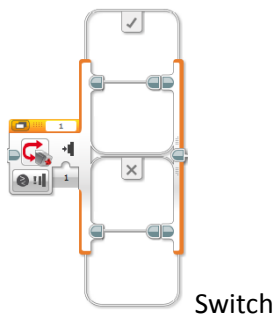
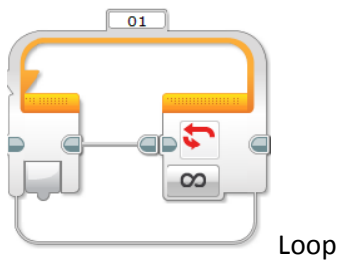
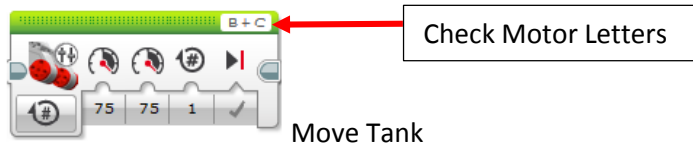
LEGO MINDSTORM

Following a line edge

Beginner Level – Zigzag following

Tip: Covering around the sensor so no light comes in will help get more accurate readings.

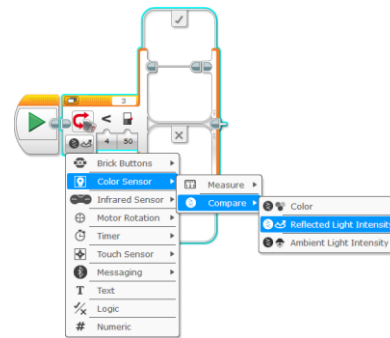
Blocks needed



Program

Step 1 - Switch

Change your switch to compare Reflected Light Intensity

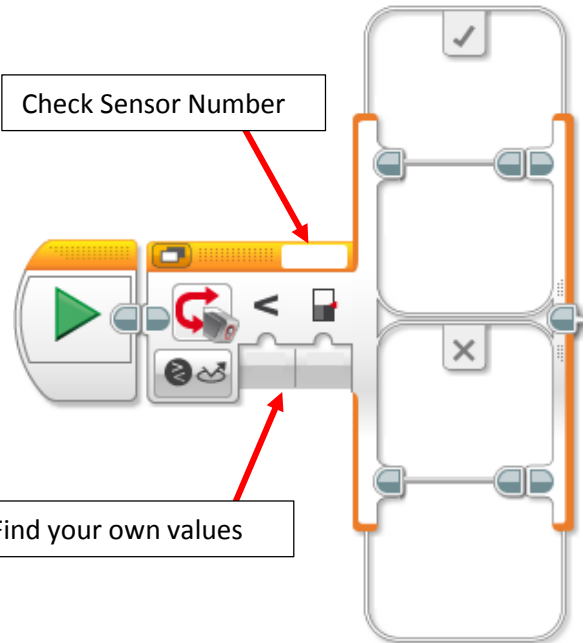


Step 2 – Light Value

Once the light reflected is greater than 40 (between 20 – 40 test your own value) you'll want to turn left or right to find the black line again.

Check Sensor Number

Find your own values



Step 3 – Turning Motor

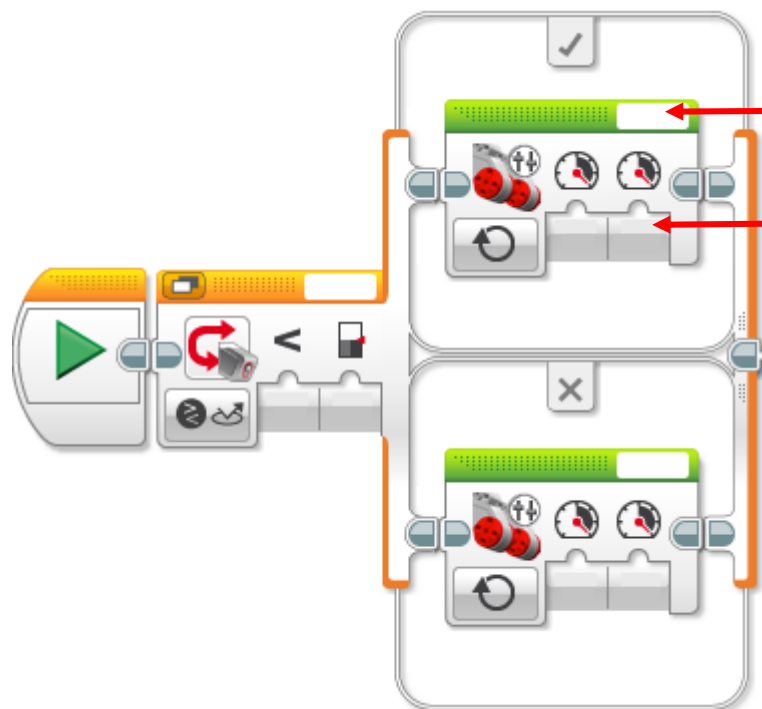
Put a Move Tank in each part of the switch.

Test your values to turn left or right.

Tip: One will be less than the other and don't make it too fast or your robot won't find the line.

Check Motor Letters

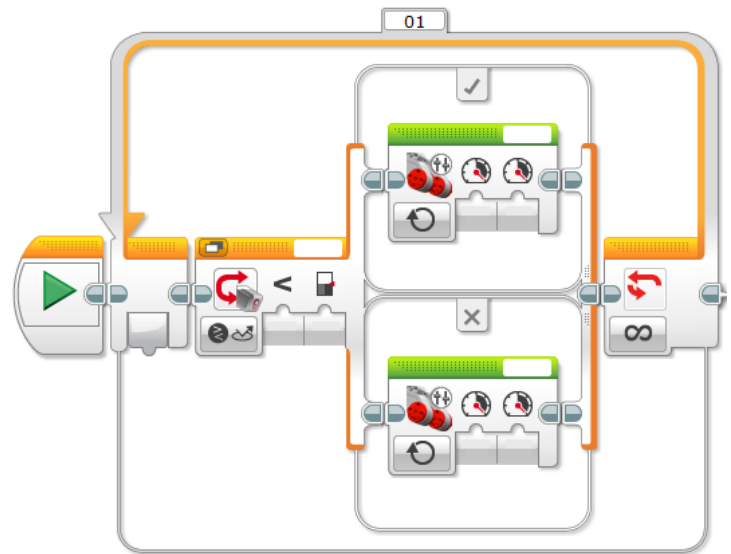
Find your own values



Step 4 – Loop

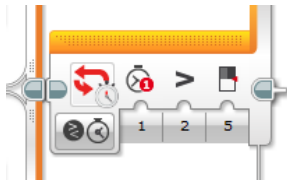
You'll want your robot to keep going, so you'll need a loop.

This will go forever, however you'll want it to stop.

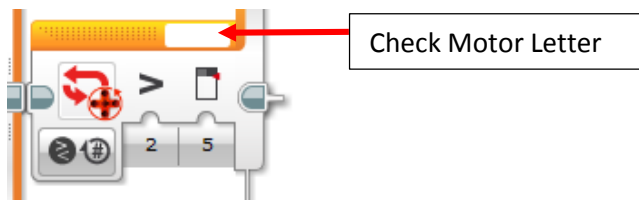


Here are some suggestions for how to stop:

- Time – after 5 sec



- Distance – after 5 rotations

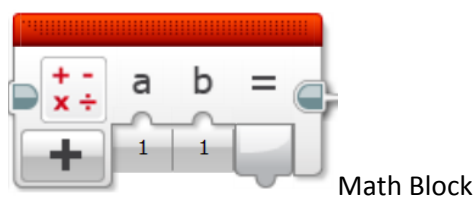
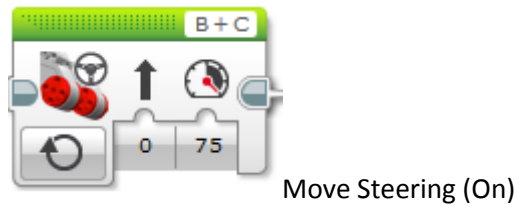
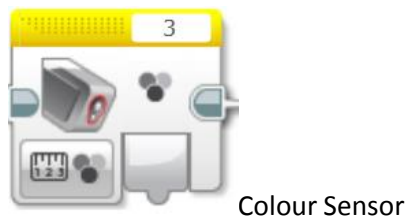
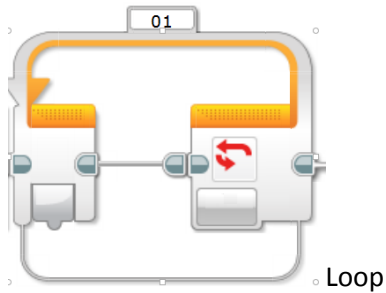


LEGO MINDSTORM

Following a line edge

Intermediate Level – Variable Steering

Blocks Needed

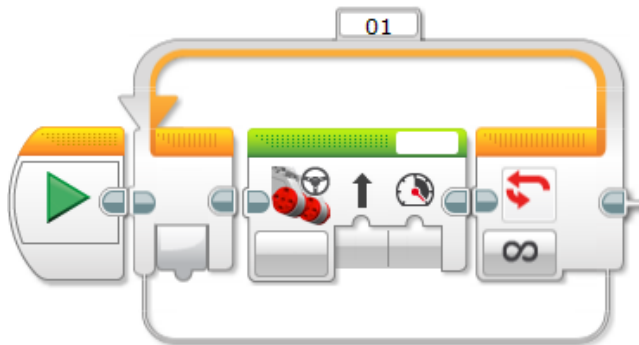


This block can be used in several different ways. Either use multiple blocks to perform your math calculations or use the “Advanced” option and write out your expression. Example $9*a-b/4+c$. The less blocks you use the easier your program is to read. Make sure you add a label to explain your advanced math block.

Program

Step 1 – Loop

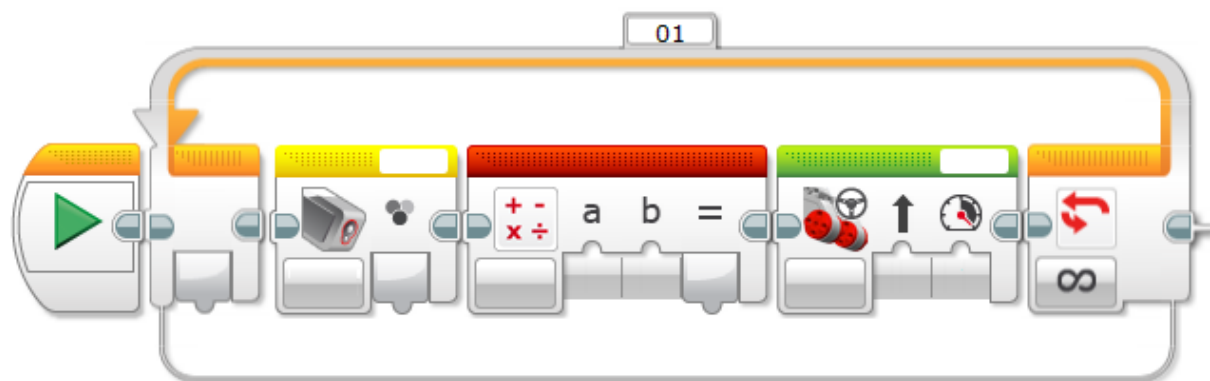
The loop is designed to continue the forward movement of the robot.



Step 2 – Calculating Steering

The light sensor value is wired into the math block to perform calculations. The result of this calculation should be the desired value for steering.

Note: The steering value will change from the most left (-100) to the most right (100)

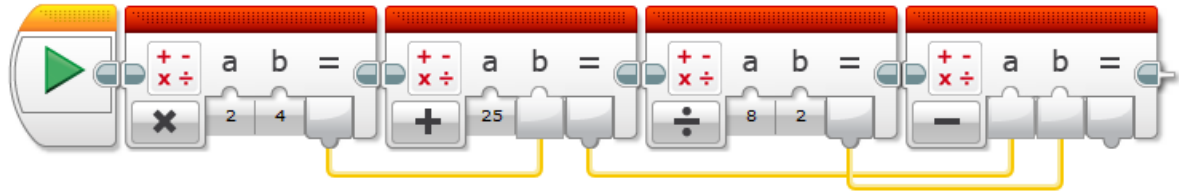


Step 3 – Simplifying your Math Blocks

The math blocks can either be used in conjunction with each other or use an expression in the “Advanced” mode. For example:

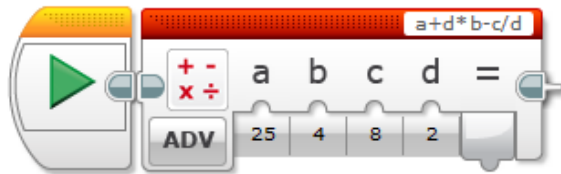
$$25 + 2 \times 4 - \frac{8}{2}$$

This calculation can be performed by multiple math blocks.



OR

The Advanced mode of the math block can be selected.



Both produce the EXACT same answer.

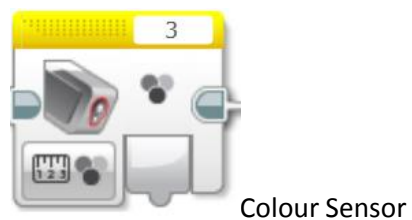
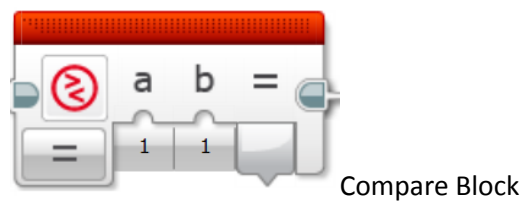
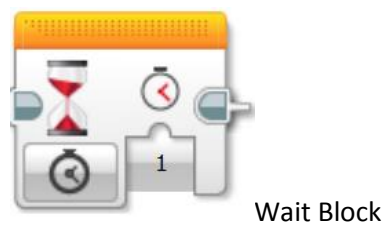
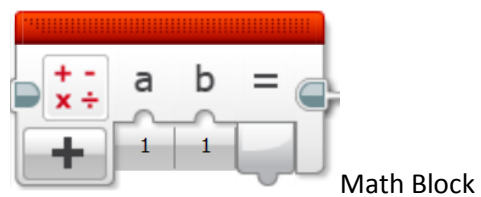
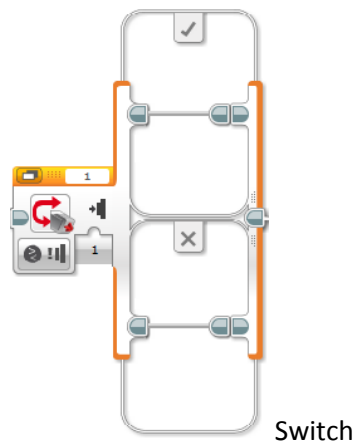
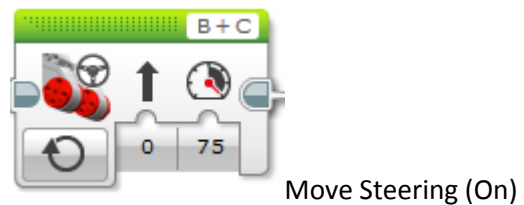
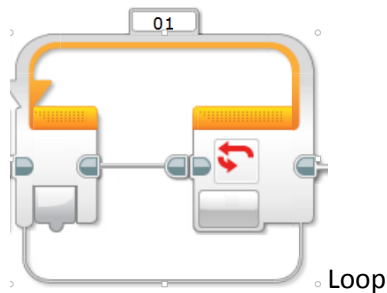
It's up to you which style you will use for your calculations.

LEGO MINDSTORM

Following a line edge

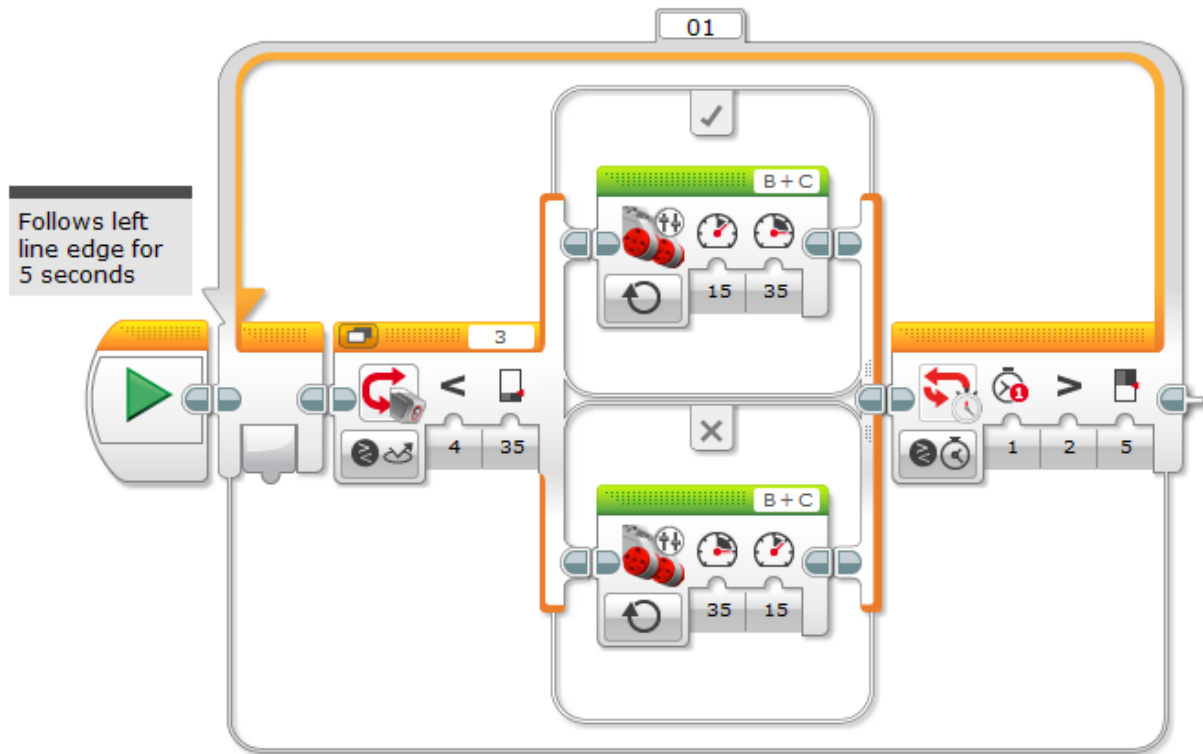
Advanced Level – Variable Steering and Variable Speed

Blocks Needed

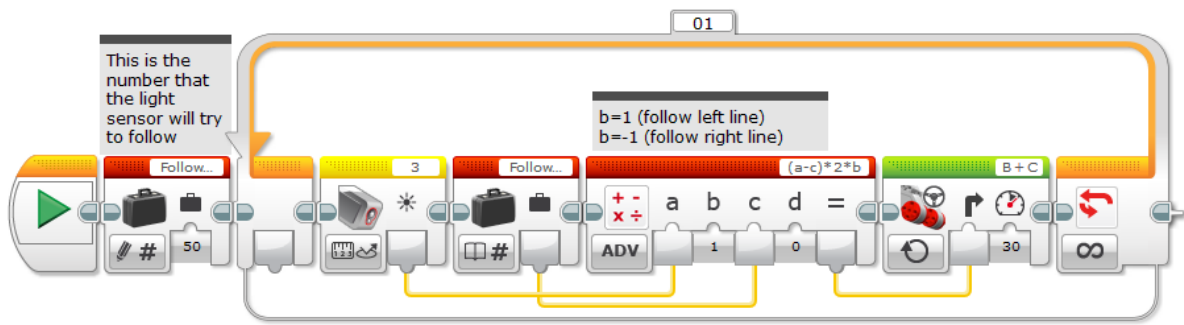


Answers

Beginner Level - Answer



Intermediate Level - Answer



Advanced Level - Answer

