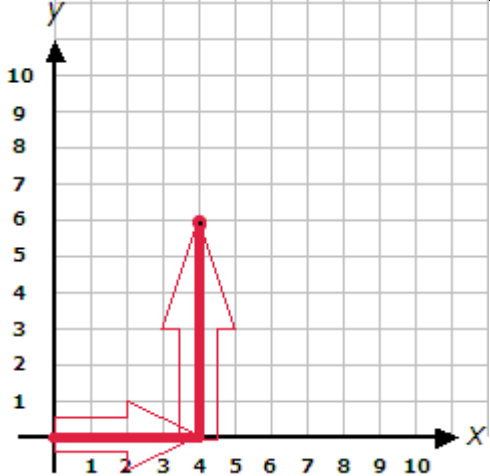
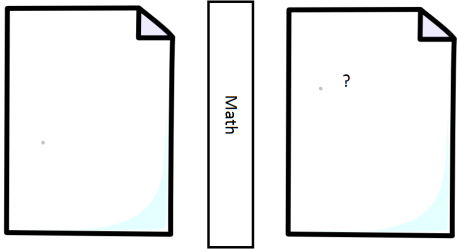


FLL Curriculum - Ontario

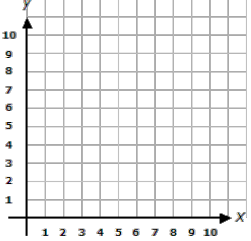
Activity Sheet	
Gr 6 - Lesson #2	Curved Move – Tracing Coordinates
Date:	Name(s):

Check That I'm Done <input checked="" type="checkbox"/>		
<input type="checkbox"/> Commented on my code	<input type="checkbox"/> Modify the task	<input type="checkbox"/> Coding Challenge

Learn	
<p>A coordinate is a group of numbers used to indicate position. We represent this location with two numbers, one indicating how far across → and the other indicating how far up ↑. For example (4,6) is 4 across and 6 up. We call the across axis “x”, and up axis “y” (just think y is taller, so goes up). Each coordinate (location) has the form (x,y). This allows us to specify an exact location with only two numbers. The origin is defined as (0,0).</p>	

Predict and Plan	
<p>You and your partner should each have a blank piece of paper, separated by a text book so you can't see each others sheets. Draw a dot on one of the pieces of paper and try and describe its location to your partner. Your partner must draw a dot on their page as close as possible to where</p>	

FLL Curriculum - Ontario

<p>they think it is, based on your description. Flip your page over and switch roles.</p>	
<p>Using your robot, drive for one second at 25% power and measure the distance it travels. This is now the size of your squares on your grid (to make your grid smaller, turn the power down). Using this, draw a rough grid on your chart paper (as big as possible).</p>	
<p>Quickly write below why you think this coordinate (two numbered) system is so useful and what was hard about the guessing game played earlier.</p> <hr/> <hr/> <hr/> <hr/>	

<p>Demonstrate/Design/Discover</p>
<ul style="list-style-type: none"> ✓ For this activity your robot is confined to only drive, vertical and horizontal, and must begin at the origin. ✓ Always starting off facing the horizontal X axis → ✓ Create a program that drives to the coordinate (3,4) driving along the grid lines in an L pattern. Show your teacher. Then create two more programs that travel to (2,2), and (1,5). ✓ Once complete, create a program that drives to (1,5) and then backwards to the origin (0,0)



FLL Curriculum - Ontario

Tips: You will need to make exact 90° turns.

If your robot drifts to one side, experiment with slowing down one of the motors slightly to fix this problem.

Record

Centimeters robot traveled in 1 second (grid size)

Number of rotations/seconds you needed to turn 90°

Questions

Question 1
Coding

What challenges did you have to overcome to have your robot arrive at the coordinate accurately?

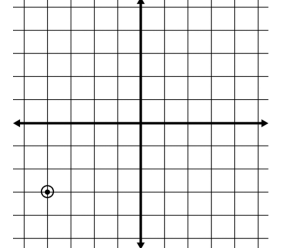
Question 2
Coding

Was anything difficult about turning exactly 90°? Why did you choose to use rotations vs seconds or vice versa to control your motors.

Question 2
Math

If you were to use larger wheels, what would change about the grid that you set up?

FLL Curriculum - Ontario

<p>Question 3 Math</p>	<p>What values might you give the coordinate shown? Notice it is not to the right and up from the origin.</p>	
<hr/> <hr/> <hr/>		
<p>Question 4 Coding</p>	<p>Can you think of a better system for explaining the location of any object then the x,y coordinates? If not explain why, if so, share it below.</p>	
<hr/> <hr/> <hr/>		
<p>Question 5 Math</p>	<p>Research and write a short summary of an important use for coordinates.</p>	
<hr/> <hr/> <hr/>		
<p>Extension Coding and Math</p>	<p>a) With your robot starting in the same direction and location as before, have it drive backwards and make 270° turns.</p> <p>b) With your robot starting at the origin, use a smooth curve to get to the same coordinates as before.</p>	