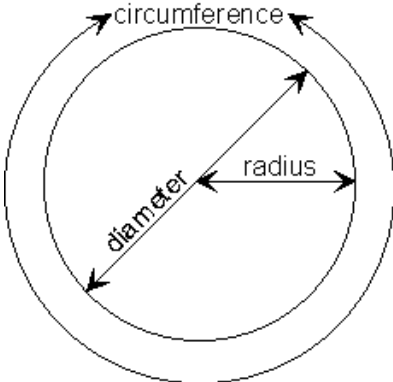



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Activity Sheet	
Gr 8 - Lesson #2	Curved Move – Discovering Pi
Date:	Name(s):

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

Learn	
<p>Pi is the ratio of a circle's circumference (outside edge length) to its diameter (width). Regardless of the size of the circle, pi is always the same number. This was at first surprising, but proves to be very useful.</p> <p>Pi (π) = C/D</p>	
<p>The width of a vehicle is defined as is the distance between the centerline of two road wheels on the same axle.</p> <p>This is properly termed the axel track.</p>	
<p>In math, a good way to break down a problem is to:</p> <ol style="list-style-type: none"> 1. Write down what you are trying to get. 2. Write down any equation or relationship you have for this unknown value. 3. See what this equation needs. 4. Find out if what you have can get you this 	<p>Example:</p> <ol style="list-style-type: none"> 1) Want area of rectangle 2) $A = l \times w$ 3) Need length and width 4) 12cm is the length but I only know 5cm = half the width 5) $W = 2 \times 5 = 10\text{cm}$ 6) $A = 12 \times 10 = 120\text{ cm}$

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information

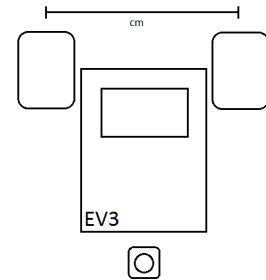
5. Get what you need

6. Solve

Predict and Plan

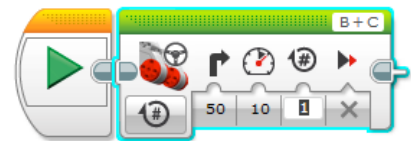
Have your robot drive forward 1 rotation of the wheel. Measure the exact distance it travels forward. _____ cm

Measure the width of your robot. _____ cm
(Centre of one tire to the centre of the other tire).



Demonstrate/Design/Discover

- ✓ Remember $\pi = \text{Circumference}/\text{Diameter}$ (as stated earlier)
- ✓ Using a steering block set to 50% right and 10% power to draw a circle with the outside tire.
- ✓ Using trial and error, set the rotations so your robot turns around exactly once. Record it here _____ rotations.
- ✓ Using the three numbers you have collected so far, calculate your estimate of π . **Use the 6 problem solving steps described in the learn section. Show your work.**
- ✓ **Tips: Leave your robot plugged in and hold the wire up to save time in testing.**
- ✓ **Make sure to use the DIAMETRE (not the radius)**





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Record

Put rough work in here. Show your final answer and all steps above.

Questions

Question 1
Math

How many rotations would you need for a $\frac{1}{2}$ turn and a $\frac{3}{4}$ turn?

Question 2
Math

Get the actual value of π from your teacher. Comment on how close you were, and why you may have been a bit off.

Question 3
Math

If the width of your vehicle was larger, would this have changed your value for π ? Explain.

Question 4
Math

One of the numbers we have already recorded is the circumference of your robots wheels. Rearrange the equation $\pi = C/D$ to figure out the *diameter* of your robots wheels.





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<p>Question 5 Robotics/Math *bonus challenge* (difficult)</p>	<p>If you wanted to move exactly 20 cm. a) How many rotations would you need to use using your tires? b) How many would you need to use if the tires were 10cm tall?</p>
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