Student Worksheet – DomaBot Basics TASK #1

Group Name_____ Group Members_____

Overview: NASA is in the market for a new planetary rover to explore the recently discover planet NXTopia. You are required to design and construct a robot that is capable of following a set of commands to explore the planet's surface. Before the robot is deployed, it must be extensively tested to ensure it will perform as expected. You can't fly a technician to NXTopia to reboot the robot!

Before we send our robot into space, we must first test it thoroughly here on earth. Run the following experiments and observe how your robot behaves. Do not move to the next experiment until your teacher has seen your current experiment.

Drive Forward for 90° of the wheels
How far did your robot travel? _____

Drive Forward for 0.25 rotations of the wheels
How far did your robot travel? _____

What is the circumference of the robots wheel?
(hint: you will need to measure the diameter of the wheel) _____

How far will the robot drive if the wheels turn 3 rotations? _____

Program your robot to move 3 rotations and measure how far it goes.
Does it go as far as you expected?

Drive Forward 540° slow, then 540° back as fast as possible

Turn the robot around 180°
What happened? How far did your robot turn if you type in 180°? _____

How much Duration does the wheel need for the robot to turn 180°?
(hint: keep experimenting until it is perfect!) _____

Drive forward for 500mm (OR 20 inches), turn around 180° and drive back to where you started

How much duration do you need to go forward 500mm (20 inches)?

(hint: Have a look at the circumference of your wheel,
this will tell you how far your robot goes in 1 rotation) _____

Make your robot drive in a 'figure of 8'

(hint: draw a diagram first in the space below before you start programming. Don't forget to mark your starting point!)