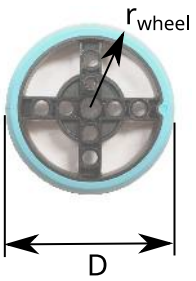
Otterbot Kinetics - 2

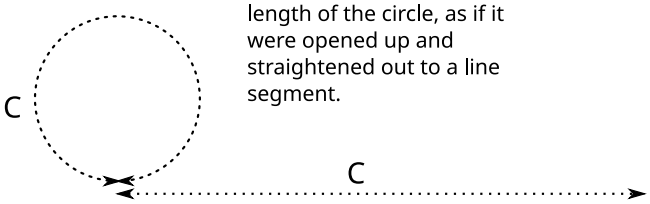
$C = \pi D = 2\pi r$

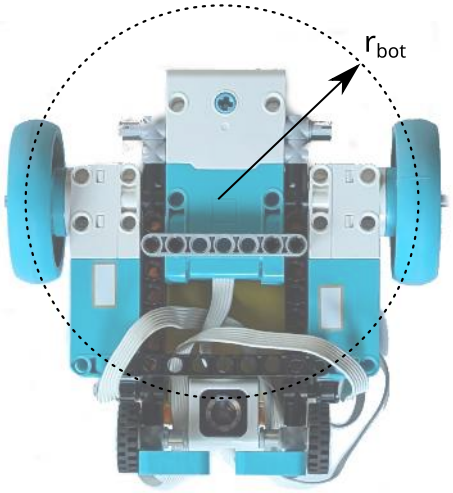


Radius: A line segment that joins the center of a circle with any point on its circumference.

Diameter: A straight line segment passing through the center of a circle.

Circumference: The arc length of the circle, as if it were opened up and straightened out to a line segment.

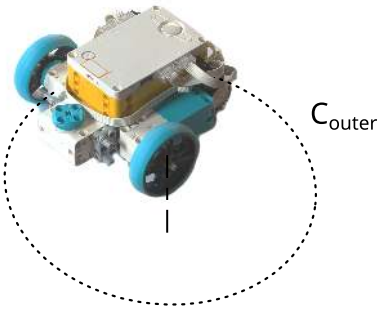




5. The robot turns in a complete circle by rotating one wheel at full speed while keepting the other wheel fixed.

What is the distance traveled by the outer wheel? (hint: for this robot)

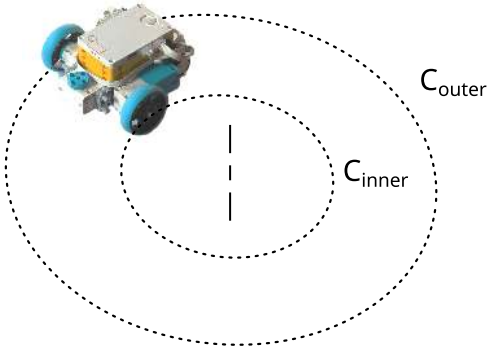
C_{outer} = _____



6. The robot turns in a complete circle by rotating one wheel at full speed while rotating the other wheel at half speed.

What is the relationship of the distance traveled by the inner wheel as a faction of the distance traveled by the outer wheel?

$$\frac{C_{inner}}{C_{outer}} = \_\_\_\_\_$$



7. The robot turns in a complete circle by rotating one wheel at full speed while rotating the other wheel at some fraction (f) of full speed.

What is the ratio of the lengths taversed by the wheels?

$$\frac{C_{inner}}{C_{outer}} = \frac{2\pi r_{inner}}{2\pi r_{outer}} = \_\_\_\_\_$$

What is the difference in the radii of the circles traced by the wheels? (hint: for this robot)

$r_{outer} - r_{inner}$ = _____