

1. Your autonomous vehicle challenge robot is equipped with two motors, one for each rear wheel. The output of each motor is connected to a 16:1 gearbox, which in turn is connected to a 6.00-inch diameter wheel. Each of the motors is equipped with a Hall Effect encoder, which delivers seven pulses for each revolution of the motor. The output of one of the encoders is connected to an Arduino and you have programmed the Arduino to count the number of pulses from the encoder. The Arduino program instructs the robot to move forward in a straight line. After a short period, 715 pulses of the encoder have been counted. How far, in feet, has the robot traveled? Provide your answer to the nearest tenth of a foot.

2. You want your AVC robot, the same one described in question 1, to travel in a square pattern, with the sides of the square measuring 25 feet. How many encoder pulses will the Arduino count after the robot has traveled 25 feet?