Supplemental Worksheet for Experiment 27

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Range of the Car (and Average Speed)

Experiment 23 – showed how to get the car to move forward
Experiment 24 – showed how to use the motor as a generator
Experiment 25 – showed how the motor could store energy in the fuel cell
Experiment 26 – used the motor to generate voltage

Now that you have the car working, the purpose of this experiment is to see how far and how fast it will go. It will be difficult to measure a straight line to see how far it goes. Instead, you can have it run around in laps.

1. Turn the wheels so that the car will go in a circle (it may be helpful to tighten the set screw). Do not make the circle too small, but make sure it won't run into things. Fill the gas tanks and reconnect the motor. Start timing the car and counting the laps.

How many laps did the car run? _____ laps

How long did it take? _____ seconds

2. While the car is running around in circles, put some tape on the ground right under where the car runs to record the size of the circle. When the car has stopped, use a meter stick to measure the diameter of the circle.

Diameter of the circle = _____ cm / 100 = _____ meters

3. The circumference of the circle will equal 1 lap.

Circumference = π (3.14) × diameter = _____ meters/ lap

4. Now multiply the distance for one lap times the total number of laps the car traveled. This is the range of the car; how far the car can go on a full tank of gas.

Range = _____ meters

5. The average speed of the car can be calculated in meters/second. Take the range (meters) and divide by the total time (seconds).

Average speed = _____ m/s