

Your Name: _____

Names of Students in Group: _____

HNRT 228 Section 003
Energy and the Environment
Laboratory Exercise #5 - The Solar Powered Car



1. Mr. Lee will provide each group the pieces necessary to build a solar powered car like the one depicted above.
2. Mr. Lee will give each group a "Sunnyside Up Solar Car Kit" assembly booklet.
3. Each group will build a solar car from the pieces provided by Mr. Lee then answer the following questions.

First Question: Take a look at how you attached your solar panel wires to the motor, with respect to the red and black leads. Now reverse the red and black lead connection to the motor and note what happens. Explain what you observe and why it happens here, then continue with the questions on the following pages.

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4. If you recall from my talk about photovoltaic cells, there are basically three different types of photovoltaic cells. Which type of photovoltaic cell was provided in this "Solar Car Kit"?
5. You may recall a discussion in class where we spoke about the different types of energy and how one type of energy is converted to another. We had a group effort to fill in the blanks of a sheet which depicted various portions of an actual automobile with lines linking the various images. Sketch below a similar type of diagram and indicate the different conversion of energy from one form to another for your solar car, in the space below.

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6. You will now see how far your solar car can travel on the floor, using a regular incandescent lamp.
7. Place the group-built solar car on the floor closest to the lamp. Allow the car to travel as far as it can, without moving the lamp. Each group will have 5 tries (you may want to re-position the lamp or your solar cell on the car) and the longest distance travelled will be used in the competition.
8. Record your distances for your 5 trials here:
 - a. Attempt #1 - Distance travelled _____ cm
 - i. Note on changes made
 - b. Attempt #2 - Distance travelled _____ cm
 - i. Note on changes made
 - c. Attempt #3 - Distance travelled _____ cm
 - i. Note on changes made
 - d. Attempt #4 - Distance travelled _____ cm
 - i. Note on changes made
 - e. Attempt #5 - Distance travelled _____ cm
9. The group's car with the winning distance travelled _____ cm.
10. By now you have noted that the fluorescent light in the laboratory classroom does not help make your solar car run. Explain why you think that the lights in the lab do not make your solar car run.
11. NOTE: Extra credit will be given to the group whose solar car travels the farthest.