

## Lab 8-4: Power

**Purpose:** To determine your horsepower as you do work against gravity running up stairs.

**Procedure:**

1. Calculate your mass in kg from your weight in pounds. Show your work in the table, and record your answer in the table below. Use the conversion factor  $1 \text{ kg} = 2.2 \text{ lbs}$ .
2. In the stairwell, measure the height from the first floor to the second floor, and record this in the answer column of row 2.
3. Time how long it takes you to go from the first floor to the second floor and record this in the answer column of row 3.
4. Complete each row of the data table below – showing your work in the middle column and the answer in the answer column.

**Data:**

		<i>Show Work Here</i>	<i>Answer</i>
1.	Your mass (kg)		
2.	Height through which you lifted your mass against gravity (m)	<i>data from class</i>	4.13 m
3.	Time to do this work (s)	<i>data from class</i>	
4.	Force you used to lift your mass (your weight) (N)		
5.	Work done by you to get to the top of the stairs (J)		
6.	Power you generated (W)		
7.	Horsepower ( $750 \text{ W} = 1 \text{ hp}$ )		

**Questions:**

1. What was your horsepower? How long do you think you could do that amount of horsepower (a couple minutes, a few hours, all day, etc.)
  
2. What was the biggest horsepower generated in the class?
  
3. What is meant by the term “work?”
  
4. What is meant by the term “power?”
  
5. Do the calculations depend on you hitting every step or could you do two steps at once?
  
6. Against what did you do your work?