

CONSERVATION OF ENERGY EXPERIMENT: POWER

PURPOSE

The purposes of this investigation are to measure the power output of persons running up a flight of stairs and to learn the meaning of the unit of horsepower.

EQUIPMENT

metric tape

Homo sapiens

stopwatch

PROCEDURE

1. Write your name on the first line of Table 1. Write the name of nine classmates in the remaining blanks.
2. Convert your weight in pounds to Newtons by using the equivalent: 1 pound = 4.45 Newtons. Record in Table 1.
3. Measure the vertical height of the staircase using a metric tape. Record. This will be constant for all trials.
4. Set the stopwatch at zero. Each student will run up the stairs as fast as possible. Students should grasp the railing for safety as well as added power. Start the watch when **both** feet of the student have left the ground floor and stop the watch when **both** feet are on the top floor. Record the time for your trial.
5. As students complete their runs, obtain the data necessary for each student listed in Table 1.

Name _____ Date _____ Period _____

EXPERIMENT: WORK AND POWER

DATA

Table 1: Data for Work and Power

Name	Weight (N)	Height (m)	Time (s)

ANALYSIS OF RESULTS

Show the calculations for **your data** in the spaces provided below. Write the answers for all trials in Table 2.

1. Calculate the work you did in Joules. Record.
2. Calculate your power output in Watts. Record.
3. The SI equivalent of 1 horsepower \approx 750 Watts. Convert your wattage to its horsepower equivalent.

