

Name _____ Date _____

Partners _____

Work and Power: Lab #7

By M.L. West

Objective: to experience the definition of work and power in a gravitational situation.

Equipment:

Background: Definitions in words and in equations:

Kinetic energy:

Gravitational potential energy:

Work:

Power:

Procedure: Climb one flight of stairs as fast as you can, taking many steps at a time and using the handrails too. Decide what measurements need to be taken to calculate work, power, horsepower, and power per kilogram. Do this several times for each person to improve your consistency. Also measure the person's height.

One horsepower is the power supplied by an average horse working in a steady manner for many hours = 550 foot pounds/sec. How much is 1 hp in watts? _____

Analysis:

Predict graphs of HP vs. mass, HP vs. person's height, HP vs. gender.

Together we will investigate whether people's horsepower correlates at all with their mass, height, or gender. Enter your data for gender, mass, height, average time to run, and run height for each person into the class spreadsheet. We will also investigate muscle quality (HP/kg). Examine the class graphs, and note class discussion and conclusions.

Write a formal lab report including equipment list, a sketch, actual procedure, data table, analysis, conclusions, and future work in this field.