

Discussion Questions (2)

Work and Power
Lab Report

Name _____
Blk _____

Introduction

This lab is designed to help you understand the difference between work and power. To do this you will calculate the work required to move your body up a flight of stairs. After calculating the work required to make it up the stairs, you will make two trips, one slow and one fast, so you can calculate and see the difference in power.

- ★ This lab requires you to run up the stairs. Move only as fast as you feel is safe. Check the path and make sure it is clear. Do not hurt yourself or others. I understand the safety notes #

Materials

- metre stick
- timer

Conclusion (1)

Purpose

To calculate work and power to help understand the difference.

To compare work with gravitational potential energy.

Procedure

- 1) Determine your weight in kg $\dot{=} N$ $\left[\begin{array}{l} \text{lbs} \div 2.2 = \text{kg} \\ \text{kg} \cdot 9.81 = N \end{array} \right]$
- 2) Measure the distance from the base of the stairs to the top (landing) in metres - to the nearest cm.
- 3) Calculate the work needed to overcome this distance (for you)
- 4) Time your partner both walking and running up the stairs.
- 5) Calculate the power required to walk and run up the stairs.
- 6) Complete the data table.

Data Table (3)

	Person 1 ()	Person 2 ()
Mass (kg)		
Weight (N)		
Stair Height (m)		
Work (J)		
Time-walking (s)		
Time-running (s)		
P_{walking} (W)		
P_{running} (W)		
GPE (J)		

gravitational
potential
energy