

## Title: Power Walking Upstairs

### Purpose:

- To determine the amount of work done by walking or running upstairs
- to determine the power involved in walking or running upstairs
- to determine the relation among work, power, and type of motion

### Materials

- stairs
- stopwatch
- index cards

### Procedure:

1. Convert your mass in pounds to mass in kg (divide your mass by 2.2)
2. Obtain index card
3. **DO NOT WRITE YOUR NAME ON THE CARD**
4. Record your mass in kg
5. Convert mass to *Force (F)* (multiply by  $10 \text{ m/s}^2$ )
6. Record the height of the stairway.
7. Record the time it takes you to walk up the stairs.
8. Record the time it takes you to run up the stairs.
9. Calculate Work required to walk and run upstairs
  - $W = Fd$
10. Calculate the Power required to walk and run upstairs
  - $Power = \frac{work}{time}$
11. Give the card to the lovely Mrs. Nuño when all data is recorded.
12. Obtain Class Data Chart.
13. Graph the class data.
  - Work vs Force
    - 2 ¼ page graphs
    - draw line of best fit
    - determine slope (remember units.....see page 105 for units for Work)
    - what does the slope represent?
  - Power vs Work
    - 2 ¼ page graphs
    - draw line of best fit
    - determine slope (remember units.....see page 106 for units of Power)
    - what does the slope represent?

### Discussion:

1. Summarize what you did.
2. Discuss your results.....remember to include data to support your statements.
3. Describe sources of error.
4. Suggest improvements.

### Conclusion: (answer the questions)

- Is there a difference in work for walking or running?
- Is there a difference in power for walking or running?

### Reflection: Personal Statement