

What's Your Horsepower?

We know that we need energy to do work. **Energy** is the capacity to do work. **Work** is the amount of force applied to an object and the distance it moves. **Power** is the rate of energy and is measured in horsepower or watts. We are going to determine how much horsepower you have.

Materials:

Calculator
Tape measure
Stopwatch
Pencil



Procedures:

1. With a partner, decide who will **walk** first and who will time first. The walker lines up at the bottom of the steps.
2. On *GO*, the walker begins walking up the flight of stairs and the timer starts the stopwatch.
3. When the walker reaches the top of the stairs, the timer stops the stopwatch.
4. Record your time in the data table. Repeat for trial #2. Partners switch roles and repeat steps again.
5. Now do the test again, this time running up the stairs. Record your time in the data table.
6. Repeat for trial #2. Partners switch roles and repeat steps again.

Walk Trial #1	Walk Trial #2	Walk Average	Run Trial #1	Run Trial #2	Run Average

Distance from bottom of stairs to top: _____ feet

Use the scale to determine your weight: _____ pounds

Use the data that you have collected to **calculate** your personal horsepower.

Walking Horsepower = $\frac{(\text{your weight} \times \text{vertical feet climbed})}{(\text{Walk Average in seconds} \times 550)}$ =

Running Horsepower = $\frac{(\text{your weight} \times \text{vertical feet climbed})}{(\text{Run Average in seconds} \times 550)}$ =

Class Average Walking Horsepower: _____

Class Average Running Horsepower: _____

Analyze and Conclude:

1. Compare your walking horsepower to the class average. Are you above or below the average?

2. Compare your running horsepower to the class average. Are you above or below the average?

3. List at least two ways in which you could increase your horsepower?

4. An average lawnmower runs on 15 horsepower. How much more horsepower does a lawnmower run on than the horsepower you produce when running? (hint: divide 15 by your horsepower)