

The Stairmaster™ Lab

Name: _____

Block: _____

Procedure:

- 1) Determine the mass of each student.
- 2) Measure the height of one stair. Count the # of stairs. Calculate the height of all of the stairs.
- 3) Time each student while they run to the top of the stairs.

Data:

Name:	Mass:	Time:
1 _____	_____ kg	_____ s
2 _____	_____ kg	_____ s
3 _____	_____ kg	_____ s

Height of one stair:	_____ m
# of stairs:	_____
Total height of the stairs:	_____ m

Calculations:

Calculate the work done and power of each student:

Name:	Work (= mgh):	Power (= W/t):
1 _____	_____	_____
2 _____	_____	_____
3 _____	_____	_____

Show sample calculations

Questions:

- 1) Consider the amount of work done by each student. What single variable determined who did the most work?
- 2) Does the amount of work done by the students depend on how fast they climbed the stairs? Explain.
- 3) Look at the power output of each student. Does doing the most work necessarily mean having the highest power output? Explain.
- 4) Although the standard unit for power is the watt, the power outputs of cars are still measured in horsepower. There are 746 W in 1 Horsepower. Calculate your horsepower.

Conclusion:

How are work and power similar? How are they different?