

Lab 2: Elevator Lab (Informal)

Purpose: To measure the acceleration of the school's elevator and verify weight changes when you accelerate up or down on an elevator.

Data: (3 marks)

Recall the difference between mass and weight.

At rest: Your mass = _____ kg Your force of gravity on Earth = _____ N

Recall that the reading on the scale is the applied force or the tension.

Going up: $F_{\text{applied}} = \text{_____ kg} \times 9.8\text{m/s}^2 = \text{_____ N}$

Going down: $F_{\text{applied}} = \text{_____ kg} \times 9.8\text{m/s}^2 = \text{_____ N}$

Calculations: (4 marks)

Using free body diagrams, calculate your acceleration (and therefore the elevator's acceleration) when you were going up and when you were going down. Show your work.

Up:

Down:

Conclusions: (5 marks)

Write your conclusions on the back of this paper. Ensure that you include answers to the following questions: Explain why your weight appeared to be different when the elevator moved in different directions. Why would your weight stabilize shortly after the elevator started (then change as it began to slow down again?) Did your "mass" fluctuate during the experiment too? What kind of errors (not "human") could have affected your results?