

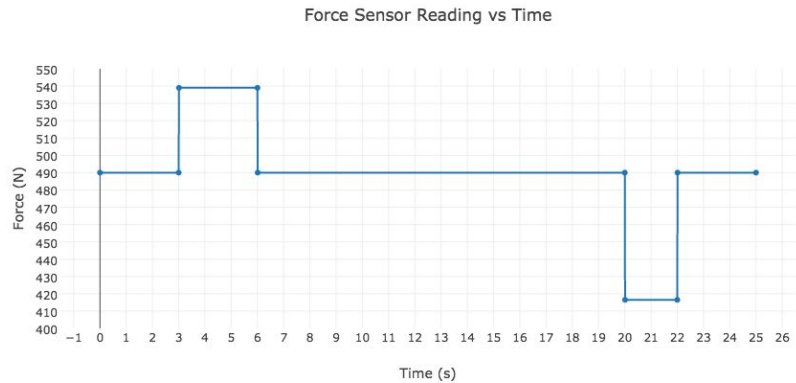
Elevator Motion

A person gets on an elevator that has a force sensor on the floor. The output for the sensor vs time from closure of the door is given by the following graph.

The peak reading is 539.0 N and the lowest reading is 416.5 N.

1. Determine the mass of the person.

2. Deduce the direction of travel
Explain.



3. Determine the acceleration during each section of the motion. Show your work.

4. Calculate the final velocity for each section. Show your work.

5. Determine the final vertical position at the end of each section. Show your work.

6. The electric potential difference (voltage) across the plates of a capacitor changes based on the separation of the plates. Explain how this could be used to make an electronic accelerometer.

7. Describe how could a cellphone app use a three-axis accelerometer to determine its path of motion.