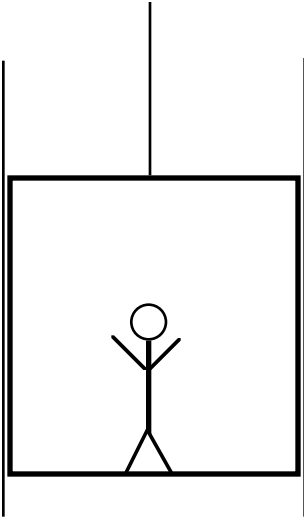


## UNIT V: Worksheet 1

1. An elevator is moving up at a constant velocity of 2.5 m/s, as illustrated in the diagram below:  
The man has a mass of 85. kg.



- a. Construct a force diagram for the man.

- b. What force does the floor exert on the man?

2. The elevator now accelerates upward at  $2.0 \text{ m/s}^2$ .

- a. Construct a force diagram for the man.

- b. What force does the floor now exert on the man?



5. Consider the situation where a person that has a mass of 68 kg is descending in an elevator at a constant velocity of 4.0 m/s. At some time "t", the elevator starts to slow to a stop at the rate of 2.0 m/s<sup>2</sup>.
- Construct, **in the margin to the left**, a qualitative motion map indicating the relative positions, velocities and accelerations of the elevator as it descends.
  - Construct **quantitative** force diagrams (include magnitudes) for the person in the elevator as it descends at (a) constant speed and (b) during its period of acceleration.
  - If the person in the elevator were standing on a bathroom scale calibrated in newtons, what would the scale read while the elevator was (a) descending at constant speed and (b) while slowing to a stop? Please explain your answers.