Honors Physics
Elevator Worksheet
North Allegheny High School
Mr. Neff

Name_____

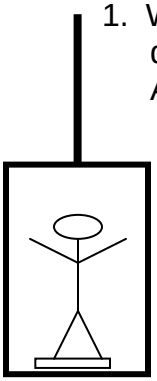
Roster Number _____

For each question show all work in the space provided. No partial credit can be given for work that is not written here. Write your final answers in the box to the right of each question.

A bathroom scale always shows the normal force or the *apparent* weight, not the true weight or the force of gravity. Sometimes, like in an inertial reference frame, you can infer the true weight from the normal force, but other times, like when the reference frame is accelerating, the normal force will be more or less than the true weight.

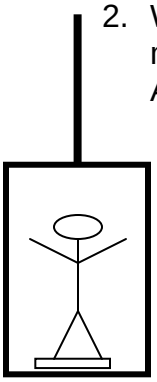
Here is a person in an elevator, standing on a scale. The person weighs 600. N.

1. What does the scale read while the elevator is moving at a constant 3.0 m/s downward? Draw a FBD on the picture and show work in the space below.
   Answer: 600. N



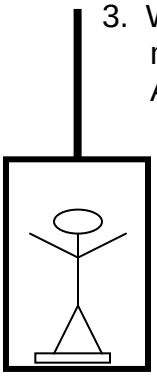
Normal Force =

2. What does the scale read when the elevator is accelerating downward at 1.5 m/s/s? Draw a FBD on the picture and show work in the space below.
   Answer: 508 N



Normal Force =

3. What does the scale read when the elevator is accelerating upward at 2.5 m/s/s? Draw a FBD on the picture and show work in the space below.
   Answer: 753 N



Normal Force =