

Name (print)_____ NetID _____

Name (print)_____ NetID _____ Section_____ TA _____

Name (print)_____ NetID _____

Name (print)_____ NetID _____

Title: Weight and Contact Force

Objectives: With Newton's laws, students have the most trouble with the "then" part of the reasoning process. In this activity, you are going to focus on making predictions based on Newton's laws, observing whether or not your predictions are correct. Along the way you'll probably correct some misconceptions about force, velocity, and acceleration.

Instructions: To fill in the and/but part of the table, you'll need to take the scale to the nearest passenger elevator and stand on it. (Sometimes scales are already in the elevator.) Record the contact force observed, deduce the weight by reasoning, and describe what you know about the direction of the acceleration in the following situations. Do the entire activity when the elevator is either moving up **or** down for multiple floors. Do not try and mix data taken up and down in your analysis. *Hint: What does a scale measure, how much you weigh or how hard you push on it?* (Text Chapter 2)

If...which law are you testing here	And I record my weight and the reading on the scale:	Then...circle your prediction	And/But.....record what happens when you actually did the experiment	Therefore....sorry, you don't get to conclude that newton's laws aren't true, but you can conclude something about your predictions.
	1) when the elevator is at rest	The contact force $> < =$ The weight Acceleration up/down/0	Contact force ----- Weight ----- Acceleration up/down/0	
	2) when the elevator is just starting to move ...circle UP/DOWN	The contact force $> < =$ The weight Acceleration up/down/0	Contact force ----- Weight ----- Acceleration up/down/0	What happens when the acceleration and velocity are in the same direction?
	3) when the elevator is moving at a constant speed between floors	The contact force $> < =$ The weight Acceleration up/down/0	Contact force ----- Weight ----- Acceleration up/down/0	Can the acceleration be zero if the velocity is not zero?
	3) when the elevator is stopping	The contact force $> < =$ The weight Acceleration up/down/0	Contact force ----- Weight ----- Acceleration up/down/0	What happens when the velocity and acceleration are in opposite directions?