

**Prelab-PHYS221**  
**Experiment 5- Newton's Second Law**

1. What is the objective of this experiment? 1 pt.
  
  
  
  
  
  
  
  
  
  
2. What is Newton's Second Law? Give the formula and a qualitative explanation? 2 pt.
  
  
  
  
  
  
  
  
  
  
3. How is the tension supplied to the cart in this experiment. 1 pt.
  
  
  
  
  
  
  
  
  
  
4. In step 5 explain how friction is compensated for? 1 pt.
  
  
  
  
  
  
  
  
  
  
5. Draw force diagrams for the cart and the hanging mass in step 5 (measurement of friction) and step 8 (measurement of acceleration)? Draw to scale (i.e., your diagrams should delineate between  $\sum F = 0$  and  $\sum F = ma$ ). 2 pts.
  
  
  
  
  
  
  
  
  
  
5. Should the acceleration determined in step 10 (or any part of the experiment) be equal to, greater than, or less than the acceleration of gravity ? Explain (Assume friction is negligible and use Equation 4). 1 pt.
  
  
  
  
  
  
  
  
  
  
6. Create a data table for this experiment. Use the back of page if necessary. 3 pts.