

# Mass and net force essay sample



**ASSIGN  
BUSTER**

1. From the results of part A (Table 1), how  $m =$  would you relate the acceleration of the cart to the total hanging weight?

\* The relationship between the acceleration to net force is that, as the acceleration increases, the force also increases, and vice versa. If you graph this the curve will be inverse logarithmic equation. It has no intercepts because there is no trail conducted that includes no mass (weight) at all, regardless if it is the mass from the hanging object. Hence, it is apparent that acceleration is directly proportional to the net force if the mass of the body is constant

2. From the results of part B (Table 2), How would you relate the acceleration of the cart to its total mass?

\* As you can see on the Preliminary Data sheet, in acceleration vs mass, it is shown that as the mass increases, the acceleration decreases. Conversely, as the acceleration increases, the mass decreases. This follow that when the cars is loaded (increase in mass, a resisting force), the acceleration decreases. Thus it can be inferred that acceleration is inversely proportional to mass when the net force of the body is kept constant

3. List down the possible sources of error in this experiment.

- a. Dynamics track angle and condition
- b. Accuracy in distance of photogates
- c. Initial velocity at the time it passed the photogate 1
- d. Smart timer error and misreading
- e. Human factors

1. Are the objectives of the experiment met? Explain. A body of mass '  $m$ ' subject to a net force '  $F$ ' undergoes an acceleration '  $a$ ' that has the same direction as the force and a magnitude that is directly proportional to the force and inversely proportional to the mass,  $F = ma$ . Alternatively, the total force applied on a body is equal to the time derivative of linear momentum of the body. We were able to meet the objective of the experiment which is to verify the direct proportionality of acceleration and the net force of the mass of the body is constant and to verify the inverse proportionality of acceleration and mass if the net force is constant.

2. Discuss the practical application of the concept/s learned from the experiment. A mother and her child were in the grocery shopping for food. With the same cart of groceries, the mother can push it with much greater force than her child. Thus, if the child will push the cart of groceries, the child can push it in much lesser speed. This satisfied the Newton's second law of motion that acceleration is directly proportional to the net force. In the same scenario, from the start of the mother's shopping, the cart will just have its mass but until she finished shopping, the cart was full of food and obviously increased the total mass of the cart. During the beginning of her shopping, she is moving at a specific speed but after some time and masses added to the cart, she is moving slower. This is because the acceleration is indirectly proportional to the mass.