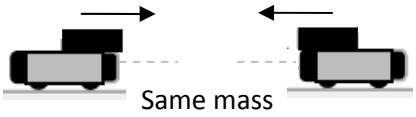
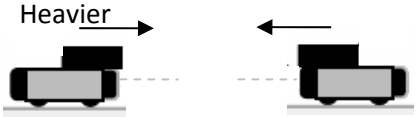
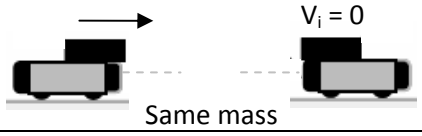
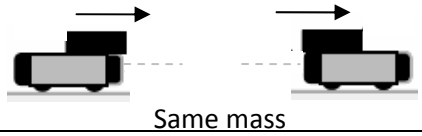
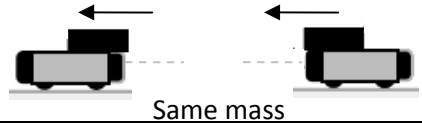
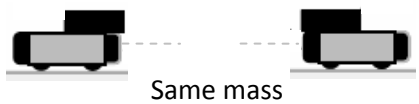
Name: _____ Student ID: _____ TF's signature: _____

PY105 Laboratory - Forces Between Carts

Report Sheet

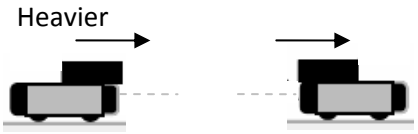
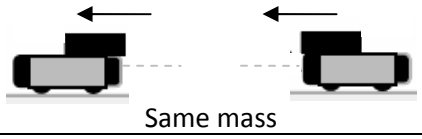
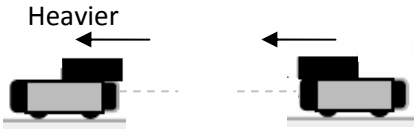
You do not need to write a formal report for this lab. Instead, you should complete this report sheet as you are doing the experiments and show it to your TF in the end. Do not leave the lab. until your TF has reviewed and signed it.

Part II Collisions and Pushing Situations (0.2 points each. The "any one other situation" is optional, but you get up to 0.6 bonus points by filling it.)

Situations:	Draw arrows on the dashed lines to indicate the direction of the force experienced by EACH of the two carts as detected by the sensors. Note that you will be drawing the same arrows if you are asked to draw the **interaction forces** for the **free-body-diagrams** of the carts.	Which cart experiences a bigger force?
Head on collision between two carts with equal mass		
Head on collision where the left cart is heavier		
The left cart collides with the right cart that has the same mass and has been stationary		
The left cart, with the same mass, simply pushes the right cart to move to the right		
The left cart, with the same mass, simply pushes the right cart to move to the left		
Any one other situation (describe here)		

Question 1. In collisions and in pushing situations, the forces between the objects are **normal forces**. What can you conclude about the direction of the normal forces (point away or towards the objects)? **(0.5 point)** In other words, do normal forces always push or pull on an object? **(0.2 point)** How do the magnitude and direction of the pair of normal forces on the two objects compare? **(0.3 point)**

Part III Pulling Situations (0.2 points each)

Situations:	Direction of the forces experienced by the carts: Draw arrows on the dashed lines to indicate the direction of the forces.	Which cart experiences a bigger force?
The right cart simply pulls the left cart to move to the right. The two carts have the same mass		
The right cart simply pulls the left cart to move to the right. The left cart is heavier		
The right cart simply pulls the left cart to move to the right. The right cart is heavier		
The left cart simply pulls the right cart to move to the left. The two carts have the same mass		
The left cart simply pulls the right cart to move to the left. The left cart is heavier		

Question 2. In pulling situations (whether by a hook or string), the forces between the objects are **tension forces**. What can you conclude about tension forces (point away or towards the objects)? **(0.5 point)** In other words, do tension forces always push or pull on an object? **(0.2 point)** How do the magnitudes of the tension forces on the two objects compare? **(0.3 point)** How do the directions of the forces compare?

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To be filled by your TF:

Prelab. (10 points x 20%): _____

Lab. performance (1 point for punctuality and 1 point for lab. proficiency) x 80%: _____

Lab. report (8 points x 80%): _____

Total (10 points): _____