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## Work Sheet

Student Name: \_\_\_\_\_

Team members:

1.- \_\_\_\_\_ 2.- \_\_\_\_\_

3.- \_\_\_\_\_ 4.- \_\_\_\_\_

Instructor: \_\_\_\_\_

### Introduction

### Analysis

#### Torque

For one of the mass distributions, make a diagram to explain where the force producing the torque is being applied and also the direction of the torque. Include the relevant measurements and the appropriate units.

Using equation (9.3) from the Lab Manual, calculate the magnitude of the torque for each pulling force and verify that they match the numbers given by the simulation.

## Moment of Inertia

For each mass distribution, make a plot of torque v.s. angular acceleration and find the best fit line and its slope; include appropriate units.

From these plots, find the value of the moment of inertia for each mass.

Using equation (9.1), calculate the moment of inertia for a disk and a hoop with the same mass and radius as those used in the simulation. For a disk,  $k = 0.5$ ; for a hoop,  $k = 1.0$ . Compare these (using relative error) to the values found from your plots.

Explain why the moments of inertia for the disk and the hoop are different even though the radius and mass are the same.

## Conclusion