Name: _____ **Banner ID: _____**

Lab Group ID: _____ **Number of Lab Partners: _____**

Data Sheet
Vector Review Activity (for Physics II Students)

Your group is responsible for the equipment at your station. Use the inventory list in the box to inventory all of the components prior to beginning the lab. If you are missing components or have broken components, please notify your TA.

For the entire activity, assume that $g = 10.0\ m/s^2$.

All angles are measured counter-clockwise from the positive x axis.

Part I (10 points) Group Score: _____

Add $\mathbf{F_1}$ and $\mathbf{F_2}$ in the table below to determine the resultant force.

Force	Magnitude (N)	Angle as measured counter-clockwise from the positive x axis
F_1	2.00	0^0
F_2	3.00	120^0
F_R		

Part II (10 points) Group Score: _____

Measuring counterclockwise from 0^0, position pulleys on the force table at 0^0 and 120^0. Using a "3 legged" string set, hang a 200g mass from the pulley at 0^0 and a 300g mass from the pulley at 120^0. Hang an appropriate mass on a third pulley that is strategically positioned on the force table such that the system will be in equilibrium with the knot centered on the force table. Use $g = 10.0\ m/s^2$. Also remember that $F = m \cdot a$.

What is the relationship between the magnitude of the Equilibrium Force and the Resultant Force you found in Part I and Part II?

What is the relationship between the angle of the Equilibrium Force and the angle of the Resultant Force you found in Part I and Part II?

Part III (30 points) Group Score: _____

Using the three forces listed in the table below, theoretically determine the force necessary to place the force table in equilibrium. You will need to exchange your "3 legged" string set for a "4 legged" string set.

Force	Magnitude (N)	Angle as measured counter-clockwise from the positive x axis
F_1	2.00	20^0
F_2	3.00	130^0
F_3	1.50	300^0
F_E		

Verify your result using the Force Table. Make sure the knot will consistently re-center itself after it has been displaced from equilibrium. (i.e. With all of the masses hanging, physically move the knot from the center to see if the knot will return approximately to the center after it is released.) Your TA should verify your equilibrium condition to receive the 30 points for Part III.

Part IV (40 points) Group Score: _____

Your TA will remove your string set from your station, and the TA will provide information you will use to determine a new Equilibrium Force. Your goal is to determine the mass and the angle necessary to put the new system in equilibrium. After you have calculated the mass and the angle required to achieve equilibrium, your TA will return your string set, and the TA will witness how well your predictions put the system in equilibrium. Your grade will be based on how well the knot re-centers itself after being disturbed from equilibrium.

300g at 51^0 200g at 200^0 150g at _____ (between 130^0 and 175^0)

Group's predictions for the Equilibrium Force: mass _____ angle _____

Part V (10 points) Group Score _____

Please return all components to the plastic box/zip lock bag. Use the inventory list in the box to inventory all of the components. Lost parts will result in a grade deduction. Your TA needs to check your box prior to the group leaving to receive any of the 10 points.