Circular Motion Sample Lab Data Name_____

Period_____

Instructions: This is the data for the lab we saw as a demo in class. Graph the data and determine the relationship between the independent and dependent variables. If the graph is linear, report the equation for the graph. If the graph isn't linear, report the relationship, linearize it and report the equation for the linear graph. Use all of the results to come up with one equation that relates velocity, radius, mass and force to each other.

Velocity versus Radius

While maintaining the same hanging mass and spinning mass, students find the corresponding velocity for different radii.

Sample Data:

The following data is for a hanging mass of 500 g and a spinning mass of 56 g (#10 stopper).

radius (m)	m_h (kg)	m_s (kg)	V (m/s)
.2	.5	.056	3.8
.3	.5	.056	4.9
.4	.5	.056	5.8
.5	.5	.056	6.5
.6	.5	.056	7.1
.8	.5	.056	8.2

Velocity versus Mass

While maintaining the same hanging mass and radius, students find the corresponding velocity for different spinning masses.

Sample Data:

The following data is for a hanging mass of 500 g and a radius of 0.5 m.

radius (m)	m_h (kg)	m_s (kg)	V (m/s)
.5	.5	.022	10.0
.5	.5	.034	8.2
.5	.5	.056	6.4
.5	.5	.086	5.2
.5	.5	.109	4.5

Velocity versus Force

While using the same spinning mass and maintaining the same radius, students find the corresponding velocities for different hanging masses.

Sample Data:

The following data is for a spinning mass of 22 g (#6 stopper) and a radius of 0.5 m.

radius (m)	m_h (kg)	m_s (kg)	V (m/s)
.5	.1	.022	4.4
.5	.2	.022	6.3
.5	.3	.022	8.0
.5	.4	.022	9.2
.5	.5	.022	10.2

Sketch of graph(s) and equations for the linear graphs: Label axes in each graph. Write a description of the relationship beneath each graph and the equation for the linear graphs. Show/Explain the process you used for determining one equation that contains velocity, radius, mass and force based on the graphs.