FLINN SCIENTIFIC

Name_____

Centripetal Force Worksheet

Part I. Feeling the Force

1. What happened to the force on the string as the speed of the revolving stopper increased?

2. Predict what would happen if you were to let go of the string. *(Do not actually do this.)*

Part II. Measuring the Force

Trial	Mass of Stopper (kg)	# of Washers	Revolutions in 20 sec	Period (s)	Radius (m)	Velocity (m/s)	Force (N)
1		6			1		
2		12			1		
3		18			1		

1. In this activity, the relationship between centripetal force and velocity is being tested. What variables must be held constant in order to do this? *Hint:* See Equation 3 in the *Background* section.

2. For each trial, calculate the velocity, v, of the rubber stopper using Equation 5 from the *Background* section. Show key calculations—include the proper units. Record the results in the the data table above.

3. Calculate the centripetal force, F, for each trial using Equation 3 in the *Background* section. Show key calculations and include the units of $kg \cdot m/sec^2$ or newtons (N). Record the results in the data table above.

4. State the relationship between the velocity of the rubber stopper and the centripetal force.

5. On a piece of graph paper, plot the number of washers versus the calculated centripetal force for trials 1–3.

6. The washers are actually creating the centripetal force needed to make the stopper move in a circle. Using the information from the graph, state the relationship between the number of washers used and the newtons of centripetal force applied to the spinning stopper.