Rotational Inertia

Spinning Ruler and Coins Lab

Essential Question: How does mass distribution affect angular velocity?

Procedures:

1. Use a ruler with a hole in the center. Tape an equal amount coins a set distance at each end of the ruler—make certain the ruler is balanced.
2. Spin the ruler on a pencil or pen for a designated amount of time (2 to 5 seconds) and count the number of spins. Do many trials and take the average. Try to keep the impulse force consistent.
3. Repeat step 2 varying the distance of those coins from the center of the ruler.
4. Repeat step 2 varying the number of coins taped to both sides of the ruler. Keep the number of coins on each side equal so as to keep the ruler balanced.
5. Create tables and graphs to represent your data.

Additional Question:

1. How does distance of mass from the center affect angular velocity?
2. List three things that needed to be controlled for in this experiment.
3. What are some potential sources of error?