

Circular Motion Lab

Materials:

Circular motion apparatus with attached Newton meter
 Meter stick
 Stop watch
 Electronic balance

Procedure:

- Measure the mass of the weight on the end of the string.
- Arbitrarily select a force on the Newton meter. Ex: 2N
- Swing the mass above your head in a horizontal circle in such a way that the newton meter consistently reads 2N. Be sure to move the center bar as little as possible.
- While swinging the mass, a partner will measure the time for 10 complete swings.
- Once finished with the swinging, measure the length of the radius of the string- be sure to pull the string out until the Newton meter reads 2N.
- Repeat the measurements for a total of 5 trials with different forces.

Put the data into a chart:

mass (kg) =

trial #	F (N)	r (m)	T	Calculate	
			for one spin	v $2\pi r/T$	a_c (v^2/r)
0	0	0	0	0	0
1					
2					
3					
4					
5					

Be sure to graph this line.

Calculations:

Calculate v using $v = 2\pi r/T$ and insert into the chart.

Calculate a using $F_c = ma_c$ and insert into the chart.

To find relationship between a_c and v graph:

- a_c vs v
- a_c vs v^2

To calculate mass:

Graph F_c vs a_c

Mass will be the slope of the line

Calculate % error- using the measured mass from the balance and the calculated mass from the graph.