## Answer on Question \#73074-Physics-Other

A marble is kept on a rough horizontal rotating table which is rotating at the speed of two revolutions per minute. The coefficient between the table and the marble is 0.6 . Find the minimum radius of the table to keep the marble in a steady circular motion

## Solution

For the equilibrium in the horizontal direction:

$$
F_{f r}=m \omega^{2} R .
$$

For the equilibrium in the vertical direction:

$$
N=m g .
$$

We have:

$$
F_{f r}=\mu N .
$$

So,

$$
\begin{gathered}
F_{f r}=\mu m g=m \omega^{2} R \\
R=\frac{\mu g}{\omega^{2}}=\frac{(0.6)(9.8)}{\left(\frac{4 \pi}{60}\right)^{2}}=134 \mathrm{~m} .
\end{gathered}
$$

Answer: 134 m.
Answer provided by https://www.AssignmentExpert.com

