

Physics Lab
Uniform Horizontal Circular Motion

This Lab will be assessed against all the assessment criteria.

Introduction:

According to Newton's 1st law, an object will travel with uniform velocity in a straight line unless acted on by some net external force. From this we can deduce that a net force *is required* to cause a body to move in uniform *circular* motion. This force is called the *centripetal force*. This is not a new force, but simply a name given to the net force that causes the change in the direction of the velocity that is required for circular motion. There are a number of factors that determine the strength of the centripetal force. In this lab you will investigate the quantitative relationship between these factors and the centripetal force acting on a body moving uniformly in a horizontal circle.

Procedure:

Identify all the relevant variables affecting the centripetal force in **uniform horizontal circular motion** and derive a relationship between these variables and the centripetal force. Design an experiment that allows you to collect enough data to test your hypothesis. When investigating a particular variable be careful to keep all other variables constant. For each variable you investigate plot a suitable graph so that the observed data can be quantitatively analysed and compared with your hypothesis. Finally make an evaluation of your results and your experimental procedure and comment on how successfully you were at predicting the nature of the centripetal force.