

Homework 2

Central Forces

1. The Moon is orbiting the Earth.
 - i) Draw a free body diagram of the force(s) acting on the Moon.
 - ii) Calculate the gravitational force on the Moon as it orbits the Earth.

2. A 20.0g body is rotated in a horizontal circle with a string 0.45 m long. The string has a breaking force of 10.0 N.
 - i) Draw a free body diagram of the forces acting on the body
 - ii) Calculate the maximum speed of the body if the string is not to break.

3. A car is travelling on a 12.0 m diameter loop as shown.



- i) Draw a free body diagram of the car at the top of the loop.
- ii) Draw a free body diagram of the car at the bottom of the loop.
- iii) Calculate the minimum speed of the car at top of the loop if the car is not to fall.