

Centripetal Forces WS

1. Find the force needed to keep a 0.5 kg rat circling 15 times every 10 seconds, if it is spun in a 70 cm circle.
2. Find the force of friction needed to keep a 3000 kg car traveling in an exit ramp of 100 m radius, with a speed of 80 km/hr.
3. A passenger on Superman Ride of Steel is cresting a hump in the ride at 15 m/s. If the hump has a radius of 30 m, what force will the 50 kg passenger feel from his seat?
4. A certain loop coaster has a vertical loop with a 40 m radius. What speed at the top of the loop will make a 60 kg rider feel “weightless?”

5. The Rotor ride at Six Flags spins at 56 rpm. What force does the 90 kg rider feel from the walls of the ride if the ride has a diameter of 6 m?

6. How many g's does a pilot feel when executing a 100 m radius turn at 100 km/hr?