All the Fun of the Fair
Introduction to Circular Motion

On this video we'll be looking at two traditions, both dating back over seven hundred years. The first is the Nottingham Goose Fair which always takes place in the first week of October. Take a look around. It's amazing that so many of the rides involve circular motion. But why? What makes people enjoy the experience of being thrown around and turned upside down? Much of the enjoyment is the sheer exhilaration of the atmosphere at the fair, but maybe the enjoyment also stems from experiencing both the speeds involved in the rides and the forces involved in circular motion. Take a closer look and a whole variety of types of circular motion can be seen. The rate of rotation is sometimes constant, that is to say that circular motion is uniform. But sometimes that isn't true. Here the rate of rotation isn't constant so we have non-uniform circular motion. Some rides involve two circular motions at the same time but about different axes of rotation. Or more than two. Some of the rides are in the horizontal plane. Whereas others are in the vertical plane. While rides like this involve a number of rotations about different axes and different planes. The purpose of this video is to enable you to build mathematical models of just four of them. We look closely at each ride and describe the properties of their motions.

This is the Chair-o-Plane roundabout. As it rotates the chairs go out at an angle. The faster the rate of rotation, the larger the angle. How does that angle relate to the speed of rotation? Does the angle depend on the weight of the child, or is it the same when the seat is empty? And is the angle the same in the inner circle as it is in the outer circle? What type of model would you use to model this motion? Is the motion uniform or non-uniform? Is it in the horizontal or vertical planes~~?~~ It's uniform circular motion in the horizontal plane.