Planes with more drag fly more slowly than streamlined planes. Planes with more drag require more thrust to counteract drag.

Consider an unmodified *JETSTREAM* that has an average speed of 4.6 m/s. After drag is added (assuming that the thrust is the same) the acceleration will be less, according to Newton's Second Law, F=MA. Therefore, a plane with more drag will travel a greater distance around the pylon while its speed increases to the point at which it can lift off the ground.

A plane with more drag will fly slower and it will also fly at a lower altitude around the pylon. Most of the energy of the plane is used to counteract greater drag and the plane does not have the needed energy to climb to a higher altitude.

The pylon string applies centripetal force that counteracts the velocity and inertia of the plane. According to Newton's 3rd Law, the string and the plane pull with equal and opposite force. If the line were to break, the plane's inertia would cause it to fly off in a straight line.

Sample Data: The following table shows some likely results for a pylon plane with a radius of 2.1 meters:

1000 Turns on the Rubber Motor	**Liftoff Around Pylon**	**Average Altitude**	**Average Laps**	**Average Total Distance**	**Average Speed** (meters/second)
Without Yarn	25 %	~ 0.8 meters	5.8 laps	76.5 meters	4.6 m/s
With 0.5 meters of yarn at the end of each wing	40 %	~ 0.4 meters	3.5 laps	46.1 meters	3.9 m/s