Project:

Demonstration as to how aeroplane wings generate lift.

Summary:  
While we know air exists around us all the time, we usually do not notice the air pressure. During this activity, students use Bernoulli's principle to manipulate air pressure so its influence can be seen on the objects around us.

Connection:  
Because they understand Bernoulli's principle, engineers manipulate air pressure in their designs to control and stabilize everything from rockets to helicopters to blimps. When designing airplane wings, engineers shape them so that they create lift. Even cars and trains are designed to take advantage of this principle, helping moving vehicles to stay on the ground at high speeds.

Introduction/Motivation:  
When talking about baseball, why does a curveball curve? Why does an airplane fly? The reasons can be found in Bernoulli's principle, which states that the faster a fluid moves the less pressure it exerts. Different air velocities are present on different parts of a curveball as well as on the different parts of an airplane. Bernoulli's principle tells us that these differences in velocity mean differences in pressure exist as well. On a curveball, the difference in pressure causes the ball to move sideways. Engineers use their understanding of pressure differences to make airplanes fly.  
  
For a system with little change in height, Bernoulli's equation can be written:  
  
P + (v2/2g) = constant  
  
Where P is the pressure, v is the velocity and g is gravity. Because this equation is always constant for a system, if the velocity increases, the pressure must decrease!

Materials required:

Thermocol sheets(2)  
Hair dryer  
Retractable utility cutter blade  
Spring.