Fighting Gravity & Drag through Flight

Long ago, people wanted to fly. They wanted to beat the forces that kept they fixed to the surface of the Earth. Gravity is the force that keeps everything on Earth's surface.

Because of gravity, everything on Earth has weight. If there was no gravity, everything (and everyone) would go floating off into space. The moon has less gravity than the Earth, so things weigh less on the moon. Weight is the measure of the force of gravity on things. Less gravity is also why the astronauts can jump so far on the moon. The force holding them to the moon is weaker than the force holding them to the Earth.

Like gravity, drag works against objects trying to fly. Drag is the force of the air molecules pushing back on moving things. Try swinging your arms around. Do you feel the wind on your arms? That is drag. The air molecules are pushing against your hands and arms.

To fly, they needed to counter the forces of gravity and drag. Through lots of trial and error people figured out that arched wings helped to create a force called lift. Lift is the force that keeps birds and gliders in the air. Lift works against gravity and drag. Most gliders have long, thin wings to create enough lift to stay in the air.