

# How Do Airplanes Fly?

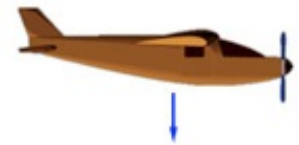
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When an airplane is in flight, there is a downward force (gravity) and an upward force (lift) acting on the airplane. As an airplane moves through the air, the shape of the wings causes there to be less air pressure pushing down on the wings than pushing up on the wings. This difference in pressure yields the upward lift. If the downward gravitational force is less than the upward lift, then the airplane stays in the air. Read on for a more detailed explanation.

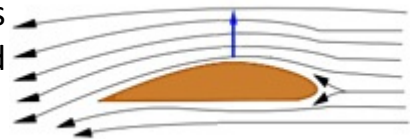
**Fact 1.** As an airplane's propellers spin, they give the airplane a forward force (thrust). As the airplane moves forward there is a backward force (drag) caused by the resistance of the air.



**Fact 2.** An airplane is attracted downward due to gravity. This force increases with the mass (weight) of the object.



**Fact 3.** As an airplane moves forward, the shape of its wing creates lower pressure above the wing than below, yielding a net upward force known as lift.



As an airplane speeds along the runway, the airplane's wings disrupt the flow of the air. This disruption causes the air above the wings to move faster than below the wings. As a result, the air pressure above the wing is less than below the wing. As the airplane speeds up, this pressure difference increases until the lift is stronger than the gravitational force, and the airplane takes off. In order to remain in flight, the thrust must be greater than the drag, and lift must be greater than the force of gravity.

*There is still some debate as to the exact cause of the difference in the air's speed around the wings. The basic concept described here, however, seems to explain why an airplane can fly.*