

Why does a plane fly?

How does something as heavy and big as a Jumbo jet fly?



The lift is the same as the weight

That's a question that I'm always being asked and my answer is simple. First change the question into **why** does something as heavy and big as a Jumbo jet fly?

And the answer is; It flies because it has no choice. If it's going fast enough the wings will lift it into the air.

It has nothing to do with the size or weight...it's to do with the shape...a brick is no where near as heavy as a Jumbo jet but it doesn't fly!

A brick doesn't have wings and if it did and they were the right size and shape then it would fly. An eagle can fly but many things much smaller can't a worm mouse or snail for example. You knew all this anyway, but now you realise that it really is down to having wings. No wings no flight...rockets of course don't 'fly' in the same way that planes do.



The lift is greater than the weight

Engines...does a plane have to have engines or have them working to fly? No is the answer to that because we've all seen the space shuttle gliding in from orbit...and the engines aren't running when that's happening. If you live in the right part of the country you can see gliders flying all the time..they're flying.

So a plane needs wings not engines to fly, it needs wings big enough to support the plane and needs to fly fast enough to develop lifting forces on them.

Suction on the top of the wing and a thick cushion of air under them supports the plane.

Flying does not defy the laws of gravity physics or mathematics or engineering it uses them.

Now then for the slightly more technically inclined.

The lift that the wings generate depends upon three things

1. The speed of the wing through the air ...called the air speed
2. The angle of the wing to the airflow..called the angle of attack
3. The size and shape of the wing...called the lift coefficient *



The lift is less than the weight

So when the plane gathers speed for take off number 1 is getting bigger

when the plane lifts its nose on take off number 2 is getting bigger

When the pilot puts the flaps out for take off or landing number 3 is getting bigger.

Pilots trade these three factors in flight for the appropriate needs at the time. Taking off; Lots of lift from numbers 2 and 3 and in cruising flight lots of lift from number 1