

Ames Public Library @HOME Activities

Flight!

Flight is controlled movement through the air. The first human flight was in a hot air balloon.

Today airplanes fly effortlessly through the clouds. How does flight work? Let's find out!

See a related video on the Library's YouTube Channel at <http://bit.ly/APLvideos>.

Books and media:

Title	Author / Performer	Call Number:
<i>Flight</i>	Nahum, Andrew	J 629.13 NAH
<i>How People Learned to Fly</i>	Hodgkins, Fran	J 629.13 HOD
<i>Extreme Aircraft! Q & A</i>	(Smithsonian)	J 629.13 EXT
<i>The Science Behind Superman's Flight</i>	Enz, Tammy	J 629.132 ENZ
<i>Super Planes</i>	Harrison, Paul	J 629.133 HAR
<i>My First Guide to Paper Airplanes</i>	Harbo, Christopher	J 745.592 HAR
<i>The Kids' Guide to Paper Airplanes</i>	Harbo, Christopher	J 745.592 HAR
<i>Origami Airplanes</i>	Jackson, Paul	e-book
<i>Bill Nye the Science Guy (DVD): Flight</i>	Nye, Bill	J 629.13 (DVD) NYE
<i>The Magic School Bus Takes Flight (DVD)</i>	(New Video Group)	J 791.4575 (DVD) MAG

Websites:

URL	Notes
www.shoppbs.pbs.org/wgbh/amex/kids/flight/index.html	
www.nasa.gov/kidsclub/flash/clubhouse/Lets_Fly_Away.html	Requires Flash

Vocabulary

Air Pressure – The force of air pushing against something.

Altitude – The height of something above sea level or Earth's surface.

Drag – The resistance force that acts opposite to the aircraft's motion through the air.

Gravity – The force that pulls objects to the center of Earth.

Lift – The upward force that causes an object to rise into the air.

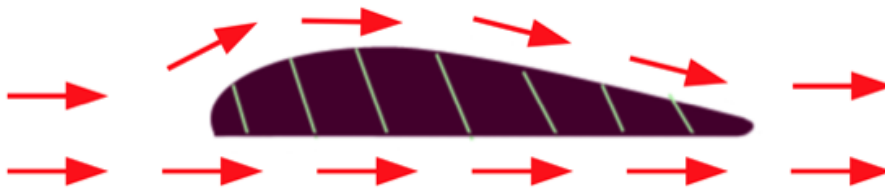
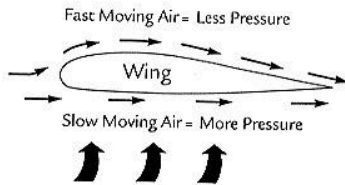
Thrust – The force that pushes a vehicle forward.



Airplanes fly high in the clouds carrying millions of pounds. How is this possible? To understand flight is it important to understand the forces of flight such as **lift, weight, drag** and **thrust**. It is also helpful to study some science principals and laws such as the Bernoulli Principle and Newton's first and third laws of motion. In science, a principal is a guiding scientific idea that is used to make predictions and develop scientific laws. Science principals are based on scientific rules and generally accepted by scientists.

Bernoulli's Principle

The pressure in a stream of fluid (or air) is reduced as the speed of the air flow is increased. In an airplane the top of the wing is curved. Air moves *quickly* over the wing. This causes **Low Pressure**.



The bottom of the wing is straight. Air moves more *slowly* here. This is an area of **High Pressure**.

The differences in pressure produces **lift**.

The air must reach the end of the wing at the same time so the air going over the top of the wing has a longer distance to travel so it must travel faster.

Hoop Glider

<https://sciencebob.com/the-incredible-hoop-glider/>



Paper Airplanes:

The Arrow

www.10paperairplanes.com/how-to-make-paper-airplanes/03-the-arrow.html



The Dart

www.10paperairplanes.com/how-to-make-paper-airplanes/09-the-dart.html



The Moth

www.10paperairplanes.com/how-to-make-paper-airplanes/01-the-moth.html



Paper Rocket Data Log

Distance traveled (inches)	Trial #1	Trial #2	Trial #3	Trial #4	Trial #5	Notes