



Moving Systems Design Project Lessons

Websites

[Dynamics of Flight](#)

This website describes how an airplane flies, highlighting the effects of thrust, drag, gravity, and lift. Included are simple diagrams that show the direction of each force acting on an airplane.
(<http://www.grc.nasa.gov/WWW/K12/UEET/StudentSite/dynamicsofflight.html#forces>)

[Engines](#)

This section of the NASA website, geared for elementary students, describes how engines work, with emphasis on propulsion.
(<http://www.grc.nasa.gov/WWW/K-12/UEET/StudentSite/engines.html>)

[Galileo Drops the Ball](#)

Students discover what happens when two balls of different masses, but of similar shape & density, are released together from the Leaning Tower of Pisa. In addition, students can explore how air resistance affects different falling objects.
(<http://www.seed.slb.com/labcontent.aspx?id=10206&terms=galileo>)

[Gravity](#)

This website provides background information about gravity and how it affects motion.
(http://www.physics4kids.com/files/motion_gravity.html)

[Lift and Drag](#)

Lift and drag are described on this website. Some very nice illustrations and animation accompany the written content.
(<http://www.pbs.org/wgbh/nova/space/lift-drag.html>)

[Friction Basics](#)

The information presented on this website describes the force of friction and resistance.
(http://www.physics4kids.com/files/motion_friction.html)

[Speed Machines](#)

Use this link for background information on the fastest airplane, boat, and car.
(<http://www.pbs.org/wgbh/nova/barrier/machinesleft.html?anchor=boat#boat>)



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Books

Can You Feel the Force

By Richard Hammond (2006, Dorling Kindersley Publishing, Inc.)

This entertaining book provides a timeline of inventions that demonstrate force and motion from 600 BC to the present. The author describes the work done by important scientists such as Copernicus, Galileo, and Newton. He describes the forces of drag, friction, lift, and gravity in graphic, entertaining, and informative ways.

Forces and Gravity

By Robin Doak, John-Ryan Hevron, Scott Ingram, Anna Prokos, Rachel Roswal, and Denise Vega (2004, Gareth Stevens Publishing)

This interesting book uses a variety of writing styles to provide information about forces and gravity. It includes relevant topics such as a timeline of important inventions involving force and motion, an article about forces involved in various sporting activities, and facts about forces in unusual places such as space and the deep ocean.

Forces Makes Things Move

By Kimberly Brubaker Bradley; Illustrated by Paul Meisel (2005, Let's Read and Find Out Science, Harper Collins Publishers)

This age-appropriate, non-fiction book discusses simple concepts of force and motion. The author provides many examples of the way objects move and goes into great detail about the effects of friction and gravity on the motion of objects.

The Wright Brothers for Kids: How They Invented the Airplane

By Mary Kay Carson (2003, Chicago Review Press, Inc.)

This book is designed for a older readers, but it provides a wonderful account of the Wright Brother's story. It also includes 21 hands-on activities, many of which are simple to replicate, that help show the principals of flight.