



Dk Reader: Rockets And Spaceships by Karen Wallace.
To Space and Back by Sally Ride.
The Handy Space Answer Book by Phyllis Engelbert and Diane L. Dupuis.
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Some activities adapted from <http://quest.arc.nasa.gov/space/teachers/rockets/>.
Written by Jennifer Boxer, illustrated by Dennis Smith



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SPACE

A JOURNEY TO OUR FUTURE™

Want to know more about rockets and space? Try these websites and books!

- <http://solarsystem.nasa.gov>
- <http://planetquest.jpl.nasa.gov>
- <http://amazing-space.stsci.edu>
- <http://kids.msfc.nasa.gov>
- <http://www.spaceexhibit.com>
- <http://spaceink.nasa.gov>

Explore Some More:

LIFT is the force that holds the Space Shuttle in the air on its way back through Earth's atmosphere. Lift is usually generated by the wings. The force of lift is generated by the difference in speed between the aircraft and the air. The Space Shuttle needs wings to control lift and stability because it lands like an airplane so that it can fly again.

4. On the Wing.

DRAW is the force that holds the rocket, or your car, back when it is accelerating forward. It slows the motion through the air. It is generated by the difference in speed between the solid rocket body and the fluid air it moves through. Rockets and cars are designed with a narrower nose in the front and curved sides that help them glide smoothly through the air and reduce drag.

3. What a Drag.

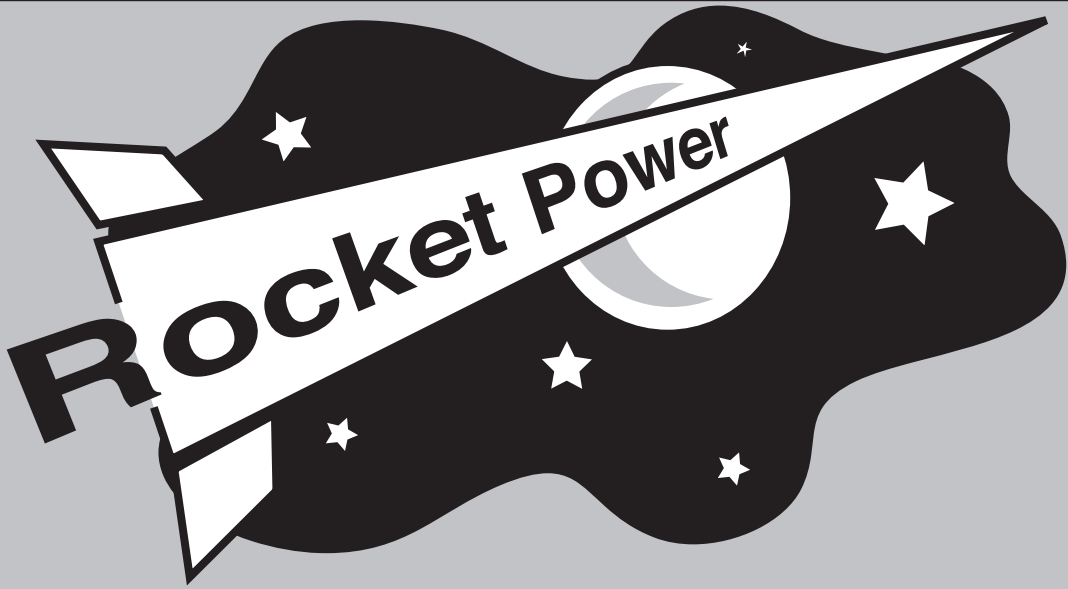
Expanding gases are one source used to produce **THRUST**. The gases you create cause the balloon to expand. The balloon pushes on the gases and the gases push back on the balloon. When you release the balloon, the gases rush backwards and the balloon rushes forwards. Real rocket fuel creates that same effect with a controlled chemical explosion. Thrust, generated by engines, moves a rocket through the air and into space.

2. Ready for Take Off.

WEIGHT is the force generated by Earth's gravity that pulls a rocket down to Earth. Gravity also generates your weight and keeps your feet on the ground. The pressure from the air you pump into the bottle and from the water that is released provides enough force to overcome the weight and send it into the air. Then gravity overcomes that force and brings your rocket back to Earth.

1. Out of this World.

What's Happening:



hands-on science activities for



Dreams - Since people first looked up at the stars, we have wished we could find a way to get there.

Tools - In 1969, after many years of dreaming and experimenting, scientists and engineers at NASA made a rocket strong enough to send people to the Moon.

Adventure - Would you like to build your own rocket and watch it blast off?

Look inside to find out how to handle the four forces of flight:

