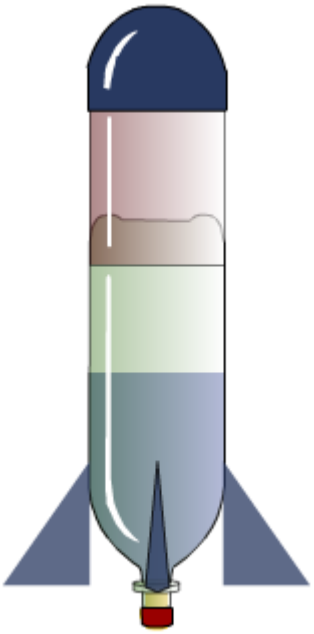
About Rockets
Start Your Journey
Educator Section
Rocket Safety
The Simulators
Install 3D Simulator
Home

Beginner's Guide
Index

ALL ABOUT WATER ROCKETS



Water (or Bottle) Rockets

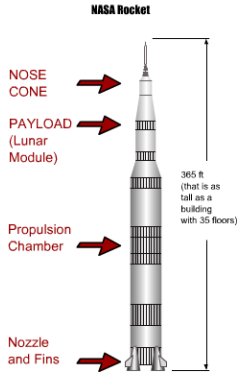
Bottle rockets or water rockets, what are they?

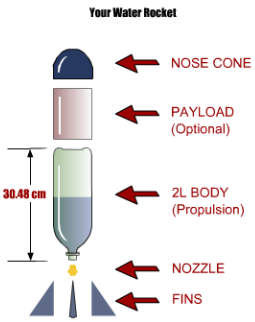
When someone mentions bottle rockets, do you envision placing a firecracker attached to a stick into a glass bottle and launching it?

Water rockets have been a source of entertainment and education for many years. They are usually made with an empty two-liter plastic soda bottle by adding water and pressurizing it with air for launching (like the image to the right).

Soda companies began using plastic bottles in 1970. The Polyethylene Terephthalate (PET) material used in most plastic soda bottles today was introduced in 1973.

Water rockets are used in schools to help students understand the principles of aeronautics. The Science Olympiads provide challenges of bottle rocket design and flight, including altitudes and distances reached. Many interesting designs and additional information on bottle rockets can be found with a simple Web search.





Here is a video file of students and their teacher launching bottle rockets as part of a classroom activity: (use your browser's BACK ARROW to return to this page)

http://www.grc.nasa.gov/WWW/K-12/bottlerocket/bottlerocket.swf

Teachers and students provide the following feedback to the Secondary Science Education Department at the University of Nebraska:

> "Two-Liter Pop Bottle Rockets may well be the GREATEST PHYSICAL SCIENCE TEACHING TOOL EVER CREATED!!" Middle grades students can manipulate and control variables, see their hypotheses verified or refuted, and graph their findings. High school students experience the nature of science at its best. They can document their abilities with the following concepts: inertia, gravity, air resistance, Newton's laws of motion, acceleration, relationships between work and energy or impulse and momentum, projectile motion, freefall calculations, internal and external ballistics, and the practice of true engineering.

How could something that sounds so simple be so complex? Open your mind to the science and mathematics behind this educational "toy." Below are links to a brief history timeline of rocketry, a comparison between water rockets and a NASA rocket, and additional information on the parts of a water rocket.

Water Rockets - The Parts

Water rockets consist of the following parts:

Nose Cone - an extension of the bottle that comes in a variety of shapes and is used to improve the aerodynamics of the rocket.

Payload section - an optional section that could hold a parachute or a payload.

Body - a 2 liter soda or pop bottle that serves as the propusion compartment or "engine" of the water rocket.

Nozzle - a part that fits into the bottle opening to help in the propulsion of the rocket and provides a mounting point for launchers.

Fins - a part that helps to stabilize the water rocket.