Principles of Rocketry

Isaac Newton's 3rd law of Motion
■ For every _________there is an equal and opposite__________.

Our Water Rockets
■ Instead of hot gasses creating pressure, we use a bike pump and store pressure

Action: Expelling _________ from engine bottle.  (Water is forced _________)
Reaction: Water resisting against rocket body.  (Rocket is forced _________)

Water Rockets Work Like Real Rockets

Reaction:
Bottle forced_______by water being expelled _______

Action:
Water forced ____ and down by ____ pressure
When you pull the pin on the launch pad, and the latch holding your rocket to the launch pad pulls back, no force will be holding that rocket down! The _________ force of the High air pressure inside of your rocket will instantly rush out of the rocket nozzle pushing your rocket into the sky!

Mother Nature doesn't like it when things aren't equal!

Newton's Second Law

This law tells you how much force (push) is going to come out of your rocket nozzle. air is the accelerant, the The water is the_____. You are limited to a 2000 ml volume rocket engine (a 2 liter pop bottle). What ratio of compressed air (limited to 65 psi) and water (your choice) will produce the most force?

About ________the bottle full of water 100Mls

Too much mass = too much ____________ Not enough mass = nothing to push off of

Newton's Third Law

• When you pull the pin, that area of High Air Pressure in the top of your rocket engine is going to force, throw, hurl, spew that "massive" water out the bottom of your rocket at a great speed. That_____ and ____is pushing______, so your rocket must go _____.


Stability During Flight
The orientation of fins and distribution of mass help make the rocket stable.

Center of

Unstable rocket

Stable rocket

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Hannibal, NY Sept – Oct 2004

- http://www.hannibal.cnyric.org/TeacherWebs/RJones/rockets/Pow...rocketry_files/frame.htm