

Name(s): _____

Bottle Rocket Construction SPH4C

A bottle rocket is a 2L bottle in which air and water is placed under pressure before the bottle is released in an upward direction.

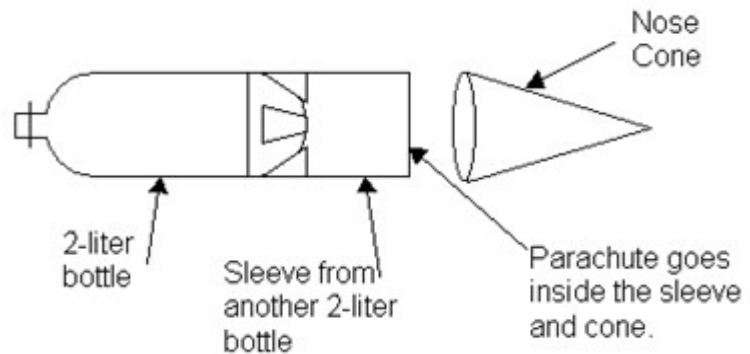
Explain, with reference to Newton's 3rd Law of Motion, what force propels the bottle upward:



You are to construct a bottle rocket similar to the one in the photo at right. The rocket needs to have fins and a nose cone to stabilize its flight and a parachute to help it come back down slowly.

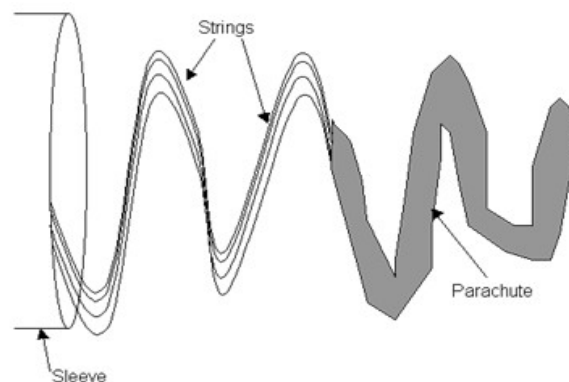
Fins should be constructed of a firm material (e.g. rigid cardboard) and be well-secured to the bottle (e.g. with duct tape). The size of the fin does matter! Think what kind of fin works best on paper airplanes. Cut the fins first but add them last so that they don't bend during construction.

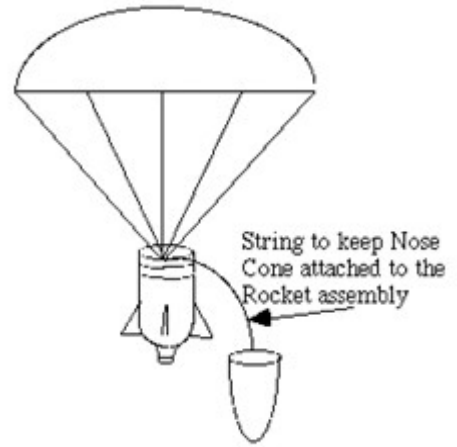
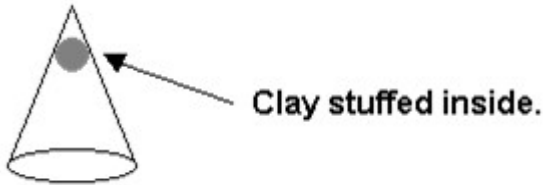
You may wish to construct a sleeve in which the parachute is concealed. The sleeve should also be made of rigid material (e.g. flexible cardboard or part of another bottle).



Use the Z-fold for the parachute as shown in the diagram below at right. A *minimum* of 6 strings should be used. More is better. Do not wrap the strings around the parachute!

The parachute itself should be constructed of plastic or light cloth.





For the nose cone to separate from the bottle and release the parachute, mass will need to be added to the nose cone. Explain why with reference to Newton's 1st Law of Motion:

After your rocket is constructed, test your rocket according to your teacher's instructions using the launcher provided.

If the bottle contains too much water, what will happen? _____

Explain why, with reference to Newton's 2nd Law of Motion: _____

If the bottle contains too little water, what will happen? _____

Explain why, with reference to Newton's Laws of Motion: _____

Sketch your final scaled design for your rocket in the space below, including details of any materials used: