



## Challenger's Morning Science Segment:

February 22, 2016

**Topic:** Forces of Flight

**Build:** Foam Rocket

### Credit:

<http://www.jpl.nasa.gov/edu/teach/activity/foam-rocket/>

### Materials Needed:

Foam Pipe insulation / Rubber Band / Stiff Cardboard / Cable Wraps / String / Scissors

**Build a Foam Rocket**– Begin by cutting an 8 to 12” piece of foam pipe insulation. (1/2 inch diameter usually works best). Then, cut four equally-spaced slits at one end of the tube, 3 to 4.75” long, to be used for the fins. Cut a string approx. 24 “ long and knot the end to create a loop. Using the first cable wrap, attach the rubber band & string. Cinch the cable wrap tight and cut off the excess. Next, drop the rubber band and string thru the pipe foam so that the rubber band slightly hangs out one end and the string hangs out of the end with the slits. Take another cable wrap and cinch it tightly around the end with the rubber band slightly hanging out. This will secure the rubber band so that it doesn't slip out. Cut two equilateral triangles, approx. 3.5” along the base, and nest them on top of each other to become the 4 fins. Place them in between the foam slits and be sure to leave the string hanging down the middle. Wrap another cable beneath the fins to secure them in place. When you are ready to launch (in a space with a high ceiling or outdoors) hold the rubber band around your finger and pull back on the string. Ready, set, LAUNCH!

**The science [credit: <http://www.jpl.nasa.gov/edu/teach/activity/foam-rocket/>]**

“The foam rocket flies ballistically. It receives its entire thrust from the force produced by the elastic rubber band, similar to that of real rockets. Its motion and course is affected by gravity and by drag or friction with the atmosphere. The launch of a foam rocket is a good demonstration of Newton's third law of motion. The contraction of the rubber band produces an action force that propels the rocket forward while exerting an opposite and equal force on the launcher. The fins, like feathers on an arrow, keep the rocket pointed in the desired direction.”

**This activity ties into the Challenger Learning Center of Maine:** Challenger's April Vacation Camp will be held April 18-22. We will complete similar engineering builds and many more activities during camp days filled with science and innovation. FMI- [www.astronaut.org](http://www.astronaut.org)