

# JAVELIN ROCKETS

## ACTIVITY GUIDE



## Activity & Procedure: "Javelin Rockets"

### PART I- THE ROCKET

1. Roll a sheet of 8 1/2" x 11" paper into a cylinder that will fit over the PVC pipe. The paper should be tight around the pipe, but should be able to slide off easily. Tape your paper tube so it stays rolled up and slip it off the PVC pipe. Put the PVC pipe aside.
2. With scissors, clip the end of the tube to make it pointed. Use tape to seal the point so it's airtight. This will be the "nose" of the rocket.
3. Rocket fins will help your rocket fly straight. Take your 3 x 5 card and cut it diagonally.
4. Tape the fins to the sides of the rocket at the base. Be sure to tape both sides of the fin to the rocket.
5. Now decorate and name your completed rocket!

### PART II- THE LAUNCHER

1. Insert about an inch of flexible tubing into the bottle opening. Tape it in place with duct tape. Try to make the connection between the tubing and the bottle airtight.
2. Push the PVC pipe against the other end of the flexible tubing. Tape the tubing and the PVC pipe together. Try to make the connection airtight.
3. Create a "launch area" by drawing a line on the ground with tape and tell they must fire from behind the line.

### PART III - BLAST OFF!

1. **MAKE SURE NO PEOPLE, ANIMALS, OR FRAGILE MATERIAL ARE IN THE PATH OF THE ROCKETS!**
2. Count down NASA-style, and have the students launch!
3. Have the participants record their distance on the "Blast Off!" chart by writing their initials at the intersection of their group name and distance.



# Hypothesis Zone

The goal to this section is to have participants reflect what they observed and learned from the activity, and engage them in further exploring the concepts. Gather the group and ask the following qus:

- What made the rockets fly the way they did? What are the variables (things that change) in the system?
- Identify different factors/variables such as weight, weight distribution, fin design, launch angle, wind.
- What made the rockets fly further or shorter distances? What is the effect of each variable?
- How will you change your rockets to make them fly further on the next launch?

## Materials List Handout

MATERIAL DESCRIPTION	QUANTITY (For 20-30 students total 3-4 students per group)
Sheet of 8 1/2" x 11" paper (can be printed on one side or recycled)	1 per student
60 cm (2ft) length of PVC pipe or any tube with a 1/2" diameter	1
Scissors	3-4, groups can share
Clear tape	1 roll, group can share
Index Cards (or any stiff paper, such as used file folders or 3" x 5" cards)	1 per student
Markers	assorted
2-liter plastic bottle	1 per group
1 meter (about 3 feet) of clear flexible vinyl tubing with 1/2 inch inner diameter and 5/8 inch outer diameter	1 per group
Measuring Tape or rulers	1 per group

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