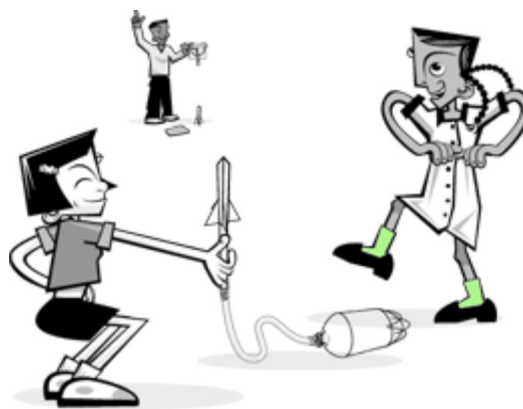


Bottle Blast-Off!

Tips for leaders

It's easy to build a simple rocket launcher from an old plastic soda bottle—and launching paper rockets is a lot of fun. Experimenting with these simple rockets and measuring how high they fly will also help your group understand concepts that they'll encounter in math class.



*Before you do this activity with your group, you need to complete [Height Site](#). In that activity, people build inclinometers, devices that will enable them to measure how high their rockets fly. We suggest you plan to spend one session doing *How High?* and two doing *Bottle Blast-Off!* That's a lot of time, but *Bottle Blast-Off!* is a lot of fun.*




Preparation and Materials

Find a place to launch your rockets. On a day that's not very windy, a playground or park is a fine launch site. You can also launch rockets in a gym with a high ceiling. You will also need to build two [rocket launchers](#), a task that takes five to ten minutes.

Planning chart 

| | |
|--|--|
| <i>Building rockets</i> | about 30 |
| <i>Practicing with inclinometer and rocket</i> | about 20 |
| <i>Launching rockets</i> | depends on size of group: about 30 for 20 kids |
| <i>Figuring how high the rockets flew</i> | about 20 |
| <i>Continued experimentation</i> | open-ended |

To build two rocket launchers, you will need:

-  Two empty 2-liter plastic soda bottles from the recycling bin
-  About 1 meter (3 feet) of clear flexible vinyl tubing with 1/2 inch inner diameter and 5/8 inch outer diameter (the type of tubing doesn't matter, as long as you can tape one end to the neck of the soda bottle and the other end to the PVC pipe)
-  Duct tape

- About 60 centimeters (cm) of PVC pipe with 1/2 inch inner diameter

To make rockets, launch rockets, and calculate the height of the rockets' flight, you will need:

- Two sheets of 8 1/2" x 11" paper for each person (recycled paper is OK)
- About 30 cm (1 foot) of PVC pipe for every group of five people (the same type of PVC pipe you used for your rocket launcher)
- Clear tape
- Scissors (at least one pair for each group of three)
- A 3" x 5" card for each person
- Pens or pencils
- A meter stick or some way to measure one meter
- A ball of string
- Rulers (at least one for each group of three)

Ask the hardware store to saw your PVC pipe into the lengths you need. If they won't, you'll also need a hacksaw blade; wrap one end of the blade with duct tape to make a "handle" and cut the pipe yourself.

Options

Often, after an initial session of rocket launching, people want to improve their rocket designs. [A Leader's Guide](#) includes suggestions for continued experimentation.



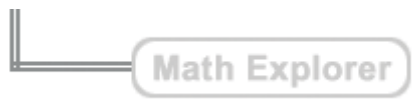
[A Leaders Guide](#)

Quick Links:

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[Building a Rocket Launcher](#)
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Tips for Leaders
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