2 sheets of paper, 20

www.jpl.nasa.gov/edu/teach/activity/stomp-rockets/
www.nisenet.org/catalog/exploring-solar-system-stomp-rockets

Empty two-liter bottle (#1)
x Electrical tape (#2)
x 20-inch PVC pipe (#3)
x (2) Elbow slip connectors (#4, #10)
x 7-inch PVC pipe (#5)
x (2) Tee slip connectors (#6, #8)
x (2) 2-inch PVC pipe (#7, #9)
x (2) 10-inch PVC pipe (#11, #14)
x
x

Use caution when launching the stomp rockets. Aim the rockets away from people, and keep everyone clear of the launcher and landing area. Stomp using just one foot. Do not run up to or jump on the bottle. Retrieve rockets after they have landed.

Choose a launch site. Go outside and find an area that is clear of people and other hazards.

Make sure the rocket launcher is stable on the ground by adjusting the legs. If needed, aim the rocket into the wind by turning the launcher.

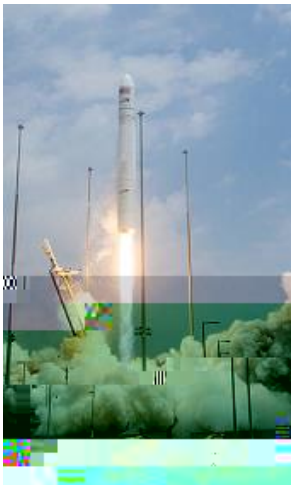
Slip your rocket on the end of the launch tube, and stand next to the bottle.

Do a 3-2-1 countdown. On "Launch J _ U firmly stom on the bottle, perpendicular to the long axis (see picture).

Many rockets carry scientific instruments. Scientists on the ground can use these instruments to explore Earth, the solar system and beyond. Scientists have used rockets to study the aurora, X-rays from the Sun, meteorite impacts on Jupiter, and much more!

In Interior Alaska, the University of Alaska operates Poker Flat Research Range, the world's only scientific rocket launching facility owned by a university. Every year, scientists at Poker Flat launch scientific sounding rockets, mostly to study the aurora.

Rocket Launch at Poker Flat. Image: NASA/Chris Perry.



In this activity, you made a paper model of a kind of spacecraft called a , or research, rocket. These rockets carry scientific instruments, called the . Sounding rockets follow an arc-like path into near-Earth space and then fall back. The science payload spends just 5 to 15 minutes in space before falling back to Earth, but this brief time is just long enough for scientists to get the measurements they need.

Antares Rocket Launch, 2013. Image: NASA/Bill Ingalls.

The design of a rocket influences how well it can fly. Over the last 100 years, rockets have grown larger and more powerful, but rocket designs are still improving. Engineers design and test each part of a rocket. By changing one variable at a time, they can determine if that change leads to an increase or decrease in performance. Then they adjust their design and try again.

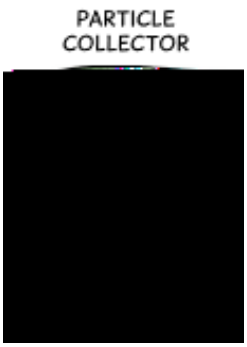
Sounding rockets, like other spacecraft, are equipped with special tools to collect data and help researchers answer questions about the universe. This part of the rocket is called the .

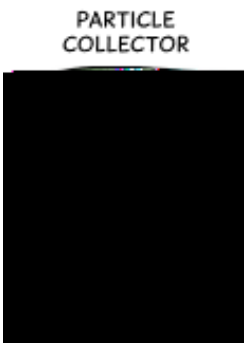
Choose at least one communication tool and one data collection tool for your Œ } l š [• u]v•]dvyX Why did you choose those tools?

A rocket sends and receive messages from Earth with a or .

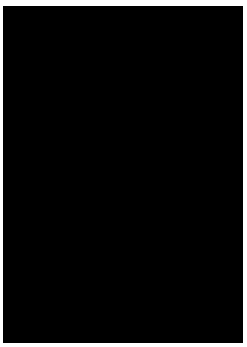
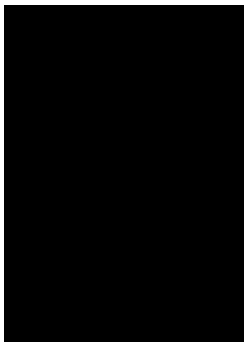


These tools make observations, take measurements, or collect samples.



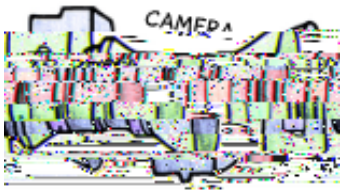


A takes samples of tiny bits of material.

A can detect invisible magnetic fields.

A separates wavelengths of light and records the data.



A uses light to collect images of objects.

www.nisenet.org/catalog/exploring-solar-system-stomp-rockets