



Activity 3: Comet on a Stick

Introduction

Comets are large balls of ice, frozen gas, and dust, sort of like outer space snowballs! They travel in long, **elliptical orbits** around the Sun — it can take hundreds of years to complete one orbit. When a comet gets close to the Sun, the ice turns to gas and together with the dust it streams out to create two long tails. If the comet passes close to Earth, we can see the tails as bright streaks in the night sky. Comet dust tails can be 6 million miles long and can sometimes stretch almost 100 million miles!

Supplies

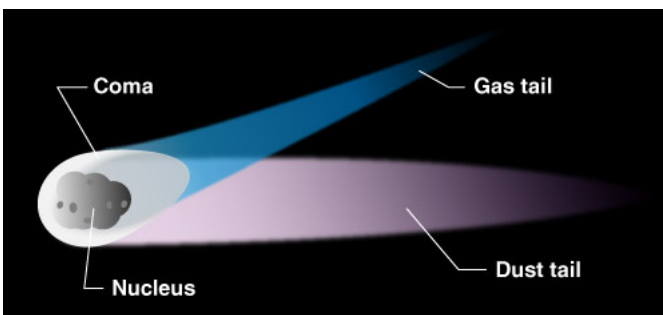
- Chopsticks, popsicle sticks, wooden skewers, or glow sticks (one per child)
- Aluminum foil (12-inch wide)
- Metallic ribbon, mylar strips, or regular ribbon — 3-6 ft per child
- Ruler
- Scissors
- Hairdryer (optional)

Get kids thinking

Watch: Comets and Asteroids (SciShow Kids): <https://www.youtube.com/watch?v=02wrLS-ue1Q>

Comets have four parts: (1) the solid nucleus made of rock, dust, gas, and ice; (2) the coma, a fuzzy cover of ice and dust; (3) a gas tail; and (4) a dust tail.

Ask kids: Have you ever seen a comet in the night sky? What did it look like?





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Let's get started!

In this challenge, kids will make a simple model of a comet and then observe what happens when their comet gets close to the Sun.

Making the comets

- Preparation: Cut five pieces of ribbon: two long pieces, two medium pieces, and one short piece for each child. If you want an extra long tail, make the long pieces about three feet in length. For each child, cut three pieces of aluminum foil so they're roughly 6" x 6".
- Show kids how to tie the ribbons around the end of the chopstick, popsicle stick, skewer, or glow stick. To make the ribbon to be as long as possible, tie the knot close to the edge of the ribbon. The ribbons are your comet tails.
- Tell kids to hold the ribbon pieces off to one side and gather the tin foil around the end of the stick with the knot of ribbons. The aluminum foil creates the nucleus and coma.
- Have kids repeat with two more sheets of foil. Gather it around and form it into a ball. If you want a bigger comet, add more aluminum foil!

Now your comet is ready to fly! Tell kids to hold the stick of their comets and run around the room with enough speed so that the ribbon "tails" are flying behind them.

Demonstrating the solar wind

The solar wind is a stream of electrically charged particles that are constantly shooting out of the Sun. Astronauts and spaceships need to steer clear!

The solar wind causes the coma to flow back behind the nucleus, forming the two tails of the comet. Because it is blown by the solar wind, the comet's tail always points directly away from the Sun.

Use a hairdryer to demonstrate the solar wind — the Sun's energy as it meets the comet. Have one child be the Sun and stand in place with the hairdryer turned onto high speed. Have the kids approach the hairdryer, one at a time. **Ask kids:** what happens to your comet as you get closer to the Sun?