

Teachers, please copy both sides of this page for your students to take home.

SPACE ODYSSEY

Dear Students and Parents,

We hope you enjoyed your recent day of science exploration and investigation with Pacific Science Center's *Space Odyssey* van. The Science On Wheels program, which began operating in 1974, is an interactive outreach program that travels to schools across the state of Washington.

The *Space Odyssey* van provides students with hands-on science and astronomy experiences. Students participate in a lively assembly, explore an interactive exhibit area and receive a 45-minute hands-on lesson. Our goal is to foster an interest in science, technology and mathematics.

We encourage you to talk about our visit and investigate the activities below. They require few materials and are easy to do. Remember: your child and his or her friends will become our next astronomer. We hope you enjoy doing these activities together!

~Science On Wheels Teachers

Materials

- empty shoe box with lid
- scissors
- push pin
- flashlight
- black construction paper (about the same size as the end of your shoe box, one piece for each constellation)

Some sources include *Glow in the Dark Night Sky Book* by Clint Hatchett and *365 Starry Nights* by Chet Raymo

- Put the lid on the box and turn out the room lights. Place a constellation card in the slit and shine the flashlight through the hole in the "planetarium."
- Slide the flashlight in or out to focus your constellation on the wall or ceiling.

What's going on?

Large planetariums work similarly to yours. In real planetariums, a small light bulb shines through holes in a sphere that projects constellations on a wall. To see a large planetarium in action, visit the Willard Smith Planetarium at Pacific Science Center.

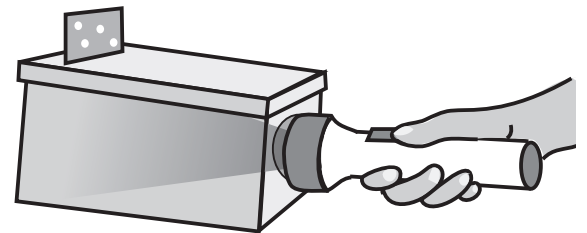


Shoe Box Constellation

Have you ever visited a planetarium? When you go to a planetarium, you can learn more about stars and their positions in the night sky. Build a mini planetarium to use at home.

Procedure

- Cut a square window in one end of the shoe box.
- On the same end, cut a rectangular slit in the lid, large enough to slide the construction paper through.
- On the other end of the box, cut a hole large enough to fit the flashlight through.
- Use the push pin to poke holes into the construction paper in the shape of a constellation. You may need to wiggle the push pin to make the holes slightly larger. Poke a different constellation into each piece of construction paper. Make sure to test the size of your constellation so that it fits through the window.



Homemade Balloon Rocket

Procedure

Step 1:

- Hang the string (or wire) from one end of the room to the other.
- Insert the straw tube piece into the mouth of the balloon. Secure the tube with tape. Test the seal between the tube and balloon by blowing up the balloon with the tube and releasing the air.
- Tie a piece of string on each end of the balloon. When attaching the string to the mouth end of the balloon the string should be tied around the straw tube, not behind it. The string can also be taped to the balloon. Make sure the tape is secure so that when the balloon is inflated the tape does not come off.
- Loop about 7 cm (3 in.) of the strings from the balloon around the string hanging across the room so the balloon hangs horizontally even. Secure the loops with tape.
- Start at one end of the string (this should be the end where the mouth of the balloon is closest to the wall). Blow up the balloon half way, then pinch the mouth to hold in the air while you set the balloon in place. Let go of the balloon. Record the distance it travels.
- Try blowing up the balloon to different amounts, recording the distance it covers each time.

Step 2:

- Take down the string from across room and attach one end to the long stick, you may not need all of the string. Hold the stick at an upward angle, as if fishing. Hold the opposite end of the string firmly to the ground (you can use your foot) so that the string is stretched straight up and down (perpendicular to the floor).
- Attach the balloon to the string again by looping it over the string stretched across the room. Make sure the mouth of the balloon is closest to the floor.
- Blow up the balloon half way, pinch the end until the balloon is in place. Let go of the balloon and record the distance it travels.
- Try blowing up the balloon to different sizes, recording the distance it covers each time.

Challenge

Compare the distances covered by the balloon when moving straight up verses moving straight across. Did the balloon travel farthest at full inflation when traveling up or out? Why do you think this happened? What does this mean to a rocket scientist who is designing a rocket for space travel?

Materials

- balloon (long, thin works best, can use round balloon)
- clear tape
- string or thin, firm wire
- 2.5 cm (1 inch) piece of plastic drinking straw
- long stick approx. 210 cm (84 inches)

