

# SPACE LAB

★ **Grade Level: K-12**

★ **Focus Area: Science, Creative Writing, Art**

★ **Time: 30-45 Minutes**

## ACTIVITY INTRODUCTION

Imagine this: you are floating, free from gravity and surrounded only by the curved walls of your laboratory.

As you drift through the air, you think about how incredible it is... how many scientists get to do their work while living 150 miles ABOVE the Earth? How many scientists get to look out a window and see Earth rotating below them? Working here, in Spacelab, is truly a dream come true.

You look to your left. The wall is filled to the ceiling with stuff. Cabinets hold parts for experiments, camera lenses are Velcroed to the wall, ready for when you'll take pictures of the work later, another astronaut floats nearby and inspects the plants you brought along as part of an important study. Over the next ten days you and your crew will do over 70 scientific investigations before going back home to Earth.

Speaking of your crew... Duck! Another astronaut floats past above you, heading for the ceiling windows to look at the views of Earth. At least, you tell yourself that's the ceiling. When living in space and floating in microgravity, you don't really have a sense of up or down. The walls can be the ceiling. The floor can be a wall. In fact, you think you might go hang out "upside down" for a little bit as you check on another experiment!

But first, you close your eyes and take a moment to listen. You hear the hum of all the technology around you, the gentle rattle of air from the life support system, the murmurs of your crew hard at work, and you feel so lucky to be here in this science laboratory in space.

## BACKGROUND INFORMATION

Spacelab was a science laboratory designed by the European Space Agency for use with NASA's shuttle program. It included several parts, including a pressurized module (a room shaped like a cylinder) where astronauts worked. When in use, Spacelab was placed inside the payload bay of a Space Shuttle, a special spaceship that could be launched to space, then land back on Earth like a plane.

Spacelab contained science experiments that focused on life sciences, microgravity, and observations of Earth. This incredible lab was used from 1983 until 1998 and flew on 22 major space shuttle missions, with some parts from it used on even more.

## ACTIVITY OBJECTIVES

- ✦ Read about the work done in Spacelab, then imagine yourself floating through space and conducting experiments.
- ✦ Use your creativity to create a picture or story about your life as a scientist living in microgravity.

## MATERIALS

- ✦ Paper (1 page)
- ✦ Coloring/writing supplies

## ACTIVITY DIRECTIONS

1. What would you do if you could spend a day on Spacelab? Imagine you are an astronaut back when Spacelab was still active.
2. Next, ask yourself: What science experiments would you try? What would you do for fun while in space? What would it be like to float in low gravity? Where would you sleep or eat?
3. Write a short story or draw a picture about your day on Spacelab.

## RESEARCH/EXTENSION QUESTIONS

- ✦ If everything floats in microgravity, how do scientists working in space avoid losing their science experiments? What if something floats away?
- ✦ How might a science lab designed for space be different than a science lab on Earth?
- ✦ If you look at pictures of Spacelab and compare them to online images of the International Space Station—a science laboratory that orbits above the Earth today—you'll see many similar design choices for the inside of both. Why is that?
- ✦ Do you think future space stations might have design elements in common with Spacelab and the ISS? What similar parts or designs do you think they might also have?