

MUSEUM^{OF} THE ROCKIES

Living in Space: Working in Space

*Living in space is different than living on Earth, because of gravity.
How do astronauts deal with the differences?*

Gravity and Microgravity

Gravity is a universal force on Earth and affects everything. If you drop a cup of pudding on Earth, it falls to the floor. Without gravity, objects would float off into space.

If an astronaut drops a cup of pudding in the Space Shuttle or the International Space Station, it falls too, but doesn't look like it's falling. That's because the pudding, the astronauts, and the spacecraft are all falling together at the same rate, while at the same time traveling around the Earth. Since they're all falling, objects appear to be floating in a state of "microgravity" in which the effects of gravity seem reduced to almost nothing. Gravity tries to pull the spacecraft to the Earth, but it is traveling so fast that it falls around the Earth, in a path we call an "orbit."

Items such as food, science experiments, and exercise equipment must all be attached to the spacecraft so they don't float around in the cabins. Astronauts float too. When they want to stay still enough to eat, work, exercise, or sleep, astronauts hold onto one of the many handles or attach themselves to the spacecraft.

Working in Space

Working in Space can be difficult. Because everything drifts in a microgravity environment, astronauts must use foot restraints and handles to steady themselves so that they can work.

Mission:

Learn how difficult it is to work in a gravity environment on Earth.

Experiment 1:

Step 1: Sit on the floor.

Step 2: Put your feet on the floor.

Step 3: Using both hands, try to unscrew the blue section from the pipe that a friend holds over your head.

Theorize:

- A. Can you unscrew the pieces?
- B. How difficult is this task?

Mission:

Learn how difficult it is to work in a microgravity environment in space.

Experiment 2:

Step 1: Sit cross-legged on the "Microgravity Simulator."

Step 2: Make sure your feet are not touching the floor.

Step 3: Using both hands, try to unscrew the blue section from the pipe that a friend holds over your head.

Theorize:

- A. Now can you unscrew the pieces?
- B. How difficult is this task?