

Investigation: Creating Microgravity

Microgravity is easy to create. It is merely a matter of dropping objects. By falling, gravity's local effects are greatly reduced. That means that if two objects are falling together, gravity's influence on them becomes nearly zero. For example, if a heavy weight is suspended from an elastic cord, the cord will stretch out. If the cord is released, the weight and cord begin to fall to the floor. With gravity's effects greatly reduced, the cord immediately retracts to its relaxed length. The following activities are methods of creating microgravity in the classroom.

Materials and Tools Checklist

- Paper cup
- Masking tape
- Rubber band (thin)
- Several washers or nuts
- Scissors

Objective

- To investigate microgravity.

Procedure

- Step 1. Cut the rubber band and tie one end to the nuts or washers. The nuts or washers should be heavy enough to stretch the rubber band when suspended from the free end.*
- Step 2. Tape the free end of the rubber band to the inside of the cup.*
- Step 3. Hold the cup upside down. Slowly turn the cup right side up so that the nuts or washers hang outside the cup.*
- Step 4. Drop the cup to the floor from eye level. Observe what happens to the weights.*
- Step 5. Discuss the implications of microgravity on spacesuit design. For example, how can fluids (water cooling system, gas circulation, etc.) be moved in microgravity?*

Extensions

- Challenge students to come up with a way of simulating the 2/5ths gravity of Mars.
- Obtain a copy of the NASA curriculum supplement *Microgravity—Activity Guide for Science, Mathematics, and Technology Education, EG-1997-08-110-HQ*. The guide contains plans and instructions for several additional microgravity demonstrations.

