



SfS Away from the Classroom!

P04: Gravity (Recommended for Grades 3-8)

Please use the following resources to learn about gravity and freefall

Watch this Video: [NASA video: What is Microgravity?](#)

Answer these questions:

- Do astronauts (and objects) on a spacecraft float? If not, what are they doing instead?
- How much of Earth's gravity is felt by an astronaut in orbit?
- *Microgravity* and *freefall* are two words for this environment. When have **you** experienced freefall?

Activities: Follow these directions to see an example of freefall in your own backyard or bathtub.

You will need:

<ul style="list-style-type: none">• Plastic or paper cup (a clear one looks cool)• Scissors for poking holes in the cup	<ul style="list-style-type: none">• Colored water (plain is okay too – it's just easier to see with food-coloring in it)	<ul style="list-style-type: none">• A place that's okay to get wet (the bathtub, or outside)
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First, watch what happens when only the water is pulled on by the force of gravity, while the cup stays still.

1. Use the scissors to make two holes in the side of the cup. The holes should be on opposite sides, about 1 cm up from the bottom of the cup. *Each hole should be small enough to cover with your finger.*
2. Cover the holes with your fingers and pour the water into the cup.
3. Hold the cup over a bathtub or outdoor location. Uncover the holes.
4. What do you observe?

Now, see what happens when the cup and the water are both falling due to gravity:

1. Cover the holes again, and refill the cup with water.
2. Hold the cup over a bathtub or outdoor location again.
3. This time, release the whole cup – watch carefully!

Make observations & use Claims, Evidence, and Reasoning!

1. **Claim:** Things and people on spaceships aren't actually floating.
 - **Evidence:**
 - **Reasoning:**
2. **Claim:** There is gravity in space.
 - **Evidence:**
 - **Reasoning:**

