

Anti-Gravity Cups

Learners will use materials from around your home and in the recycle bin to make a simple toy that appears to work by magic...but really, it's science!

Recommended Age: 5+ years old

Time needed: 15+ minutes

Link to the Video:

<https://youtu.be/L37yc8tDFLg>



What You Need

- An empty yogurt cup, or similar container
- String
- An awl, drill, or some tool to put a hole in the container; and a grown-up helper!
- Water
- A ruler or tape measure

What You Do

- With adult's help, punch two holes at the top of the cup, on opposite sides
- Run a length of string, about 2 ½ feet long, through the holes, and tie the ends together
- Fill the cup about halfway with water
- GO OUTSIDE!
- Holding onto the string, carefully try to get the cup swinging around in a circle. It takes practice!



What Else?

- Keep practicing with your anti-gravity cup! It takes a little while to get the hang of it. Once you've got it, try some tricks: Swing it over your head! Swing two cups at once! Switch it from one hand to the other!
- Don't worry if you spill the water...that's why you're using your toy outside!
- Experiment with your anti-gravity cup. Try changing one thing at a time and then test it out. What if you make the handle longer or shorter? What if you changed the amount of water?



Tips for Adults

- You may want to put a rubber washer inside the holes of the cup to prevent them from wearing through.
- Make a second cup and try it alongside your child. It's fun, and it will help them see you having to learn and practice too.



What's Going On?

This link from PBS Learning Media (Centripetal Force Roller Coaster Loops) gives an excellent description of how roller coasters and your anti-gravity cup work:

<https://mass.pbslearningmedia.org/resource/phy03.sci.phys.mfw.roller/centripetal-force-roller-coaster-loops/>

Learning and Skills Connection

- **Persistence:** Focusing, sticking to it, learning from mistakes
- **Experimenting:** Making and testing predictions, trying multiple solutions
- **Working flexibly:** Incorporating and revising ideas based on new information, employing objectivity and acknowledging subjectivity
- **Being playful:** Engaging with a playful spirit; fooling around with alternatives; making and breaking rules; taking a whimsical approach, tapping into humor; feeling pleasure and joy



Doing STEAM with Kids

STEAM stands for Science, Technology, Engineering, Art, and Math. There are lots of ways you can explore these letters, apart or together. Ask your child to make predictions, describe what they see, and to imagine possibilities and solutions. Don't worry so much about the "right" answer. Developing curiosity, and problem-solving skills are important first steps to doing STEAM!

