



Join ACM's S.T.E.A.M. Team!

Defying Gravity Challenge!

Plan – Design – Make – Test – Evaluate

This Week's Challenge:

Can you make an object float in thin air? Is it magic, or is it science?

Using materials around your home (ask permission first): experiment with gravity!
Find objects and create objects to test the force of gravity in your own home.

Materials needed to get started:

Hair Dryer or Fan

Light weight ball (ping pong ball or nerf ball, or even a small ball of paper)

Optional: Ribbon, Strips of construction paper, Newspaper, Tissue Paper, Feather, Balloon

Plan & Design:

1. Will you work alone, or collaborate with others to experiment?
2. What type of ball design will you choose?
3. What materials will you use?
4. Will you draw your design before building?
5. What will inspire your design?

Make:

Look for lightweight materials around the house to make a ball or other object to test. It could be made of paper, or yarn, foam, ribbons, Styrofoam, cotton, just to name a few. Use your imagination!

Once constructed, put your design to the test!

Test:

1. Turn on the hair dryer (cool setting) facing up. Use the slow speed at first and then then faster speed.
2. Gently place the ball in the airflow from the hair dryer. Observe.
3. Gently rotate the hair dryer back and forth. What happens?
4. Place your hand next to the ball, without touching it. What do you feel?
5. Now add a second ball. What happens?
6. Try another object. What happens?

Evaluate:

1. Did the ball float? If not, why?
2. What happened when you changed the speed?
3. Do you need to make any changes? If so, redesign and try again.

Extend an invitation for at least one other person (adult or child) to try this experiment

Questions to consider:

- Why didn't it just float away, what kept it hovering?
- Can you make the ball fall sideways without touching it?
- Have you ever heard of Bernoulli's Principle? If not, look it up and share with us what you found!!

Want to make it more challenging?

- How else can you make a ball?
- What other objects could you test to see if they will float?
- Can you think of anything else that moves air, that you can use to make an object float? (don't forget, our bodies are a machine too, and we are full of a LOT of air!!)
- Tie ribbons or strips of paper on the front of a fan. What happens?

What other ways can you defy gravity?

Go to akronkids.org for more fun experiments to do this week!

Don't forget to share your photos!!

<https://www.instagram.com/p/B3P74czpaGe/>



Next time you're at the museum, stop by our Wind and Air Exhibit!

Did you know ACM can come to your location? Check out our Mobile Museum options at:

<https://akronkids.org/visit-us/mobile-museum-outreach>