Techbridge Girls@Home

Mission 1: Slowest Lander

techbridge girls 20 YEARS

Techbridge Girls is committed to supporting our community by providing access to high-quality at-home STEM activities for our girls* and curating resources for families and educators. The below activity was designed to keep girls inspired in their STEM pursuits and empower girls* to lead fearlessly through hands-on- fun experiences that will support their STEM dreams.

As the newest member of the elite superhero team, the Techbridge Heroes, here is your first mission!

Principle Ahmed of Shady Pines Middle School has asked the Techbridge Heroes for help! Many students in the school have been impacted by COVID-19, and it is hard for students to get the school supplies they need. She is asking the Techbridge Heroes to drop off the supplies to each student by flying above their home, and dropping it down to them! This way, the Techbridge Heroes can practice good social distancing.

Your mission is to design and build a device that will hold the supplies, represented by a marble, and let them fall as slowly as possible so they land safely on the ground.

STEP 1

Get Your Materials

You will need:

- 2 sheets of paper
- Drinking straw
- 3 rubber bands
- Dixie cup
- 2 balloons
- 10 mailing labels
- Ziploc bag
- Marble
- Masking tape

STEP 2

Brainstorm

1. Brainstorm ideas for your lander, choose the design you like the best, and sketch it out with a piece of paper and a pencil
   - Remember you can *only* use the materials listed!
2. Build your lander!
   - How will your lander work? Why you think it will fall slowly?
   - How are you using the materials you were given?

STEP 3

Test & Retest

1. Using a wall as a testing site, measure 6 ft of height on the wall. Use tape to mark this spot. This is where you'll drop your device off from.
2. Carefully stand on a chair or a step ladder to drop your lander.
3. Once you drop you lander carefully, time it until it reaches the floor. Record your time below and then repeat 4 more times.
4. Calculate your device's speed.
5. Can you make it fall even slower? Can you create a device with less materials? Redesign and retest your lander

Family Corner

Bigger Picture

In this activity, your young engineer used the **Engineering Design Process**—the steps that engineers use as they design, build, and test products.

Quick Chats

- What are the steps that you went through as you designed your lander?
- Which design landed the most slowly? Why do you think this is?

Family Challenge

Compete with each other to design and build the slowest lander!

Share!

With permission from your parents or guardians, please post a photo of your completed project on Facebook, Twitter, or Instagram, and tag @techbridgegirls so we can see your great work!

STEP 4

Calculate Your Speed

Use the table below to record your time and calculate the speed of your lander.

Speed = Distance / Time

TRIAL	DISTANCE (M)	TIME (SEC)	SPEED (M/SEC)
1.			
2.			
3.			
4.			
5.			

(_____ + _____ + _____ + _____ + _____) / 5 = _____ m/sec

TRIAL 1 SPEED | TRIAL 1 SPEED | TRIAL 1 SPEED | TRIAL 1 SPEED | TRIAL 1 SPEED | AVERAGE SPEED

Glorious Goofs

Reflect on what might have gone wrong during your activity and how you were able to work through it.

Want to explore more?

Scientist and Engineers are always growing, exploring, retesting, and improving their designs. If you are looking for a bit more of a challenge, try this extra activity!

Principal Ahmed is worried about how your lander will affect the environment. She wants you to create a lander without *single use plastics*. **This means you will need to create a lander without using any balloons or Ziploc bags!** Remember to use the Engineering and Design Process to brainstorm, design, and test your new lander.