

Design a Parachute!

Step One: Get inspired!

A parachute is used to slow down an object that is descending. Parachutes are used in lots of different ways. People use parachutes when they skydive. Engineers have even used parachutes to land a rover on Mars! Since parachutes can be used for a variety of different tasks, they can come in different shapes and sizes. Here are two resources to help you learn a little about parachutes to help you with your design. Remember that engineers often do research to help them with their designs.

(Article) [The Science Behind Parachutes](#)

(Video) [How Parachutes Work](#)

(Video) [Playtime with Parachutes: Physics for Kids](#)

Step Two: Choose your Materials

Thinking about the way parachutes work, what are some materials that you might use to help an object slow down as it is falling? Do you want materials that are lightweight or heavy? Materials that are flat or round?

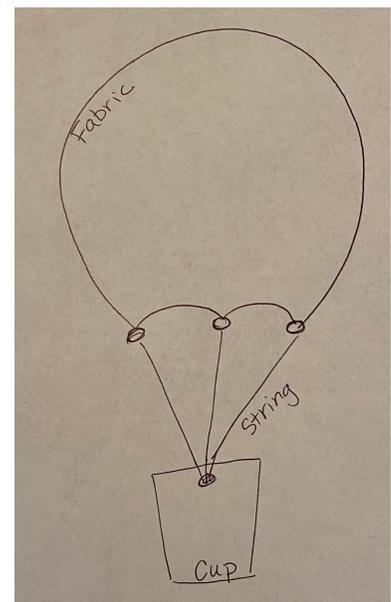
How might the materials that you choose impact your design? As we've seen, parachutes come in different shapes, sizes and they can be made of different materials (here's an overview of [common parachute types](#)). What will your choices be?

Once you've identified the material you will use to make your parachute, you'll need to think about how to attach the parachute to the falling object. For this, additional useful materials might include: string, tape, plastic cup, and/or rubber bands.

Step Three: Designing your Parachute

Engineers often begin with drawings to share and refine their ideas. Keep the materials you found in mind as you draw your designs. Here are some questions to think about as well:

1. What type(s) of object(s) could this parachute be used for?
2. How can you keep your parachute as light as possible while still being effective?
3. From where will you be dropping the parachute? How might the location you choose impact your design choices?



This activity is intended for use by adults and children who can read and follow directions and warnings. Adult supervision advised.

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Step Four: Building your Parachute.

What can you use to test whether your parachute works? Select an object (e.g., a small plastic toy or ball) that you can use with your parachute. Remember not to use anything fragile! Once you've selected your object, start building your parachute.

BE PERSISTENT! Even if your parachute doesn't work right away, keep at it!

If you need help...

- Consider working with those around you!
- Think about additional or different materials you can use.
- Take a short break and give yourself time to refresh!

We know you are all amazing problem solvers and will use your creativity to succeed at this challenge! For inspiration watch: [National Geographic: Failure & Persistence](#)

Reflection Questions:

1. What is air resistance and why is it important when using a parachute?
2. What is the minimum height at which your parachute worked?
3. How did you decide whether your object had a "safe landing" with your parachute?
4. How could you slow down even further the speed at which your object fell with your parachute?
5. How could you make your parachute work with a heavier object? Which part(s) of your design would need to change?

If you liked this challenge, click the links below to find out more!

(Article) [Explain That Stuff!](#)

(Article) [Designing for the Unknown: How NASA's Jet Propulsion Lab Engineers a Mission on Mars](#)

(Article) [Glek Kotelnikov - Inventor of the first backpack parachute in 1911](#)

(Activity) [Landing on Mars](#)

(Video) [7-Minutes of Terror: The Engineering Behind Landing on Other Planets](#)

Step 5: Sharing your Parachute on Instagram or email.

We want to see your parachute! With permission from your parent, or guardian, share a picture of your parachute for our instagram page. By direct messaging or emailing an image of your challenge, you are giving us written consent to redistribute the image on our official instagram page and [webpage](#).

- **Instagram:** @sciencecircuswhittier
- **Email:** sciencecircuswhittier@gmail.com

