



FOR YOUTH DEVELOPMENT®
FOR HEALTHY LIVING
FOR SOCIAL RESPONSIBILITY

PARACHUTE CHALLENGE

GRADE LEVEL: K-8

OBJECTIVES:

- Encourage youth to question and determine a plan
- Increase youths' ability to work as a group to design
- Increase youths' ability to test and redesign

TIME: 60 minutes

MATERIALS:

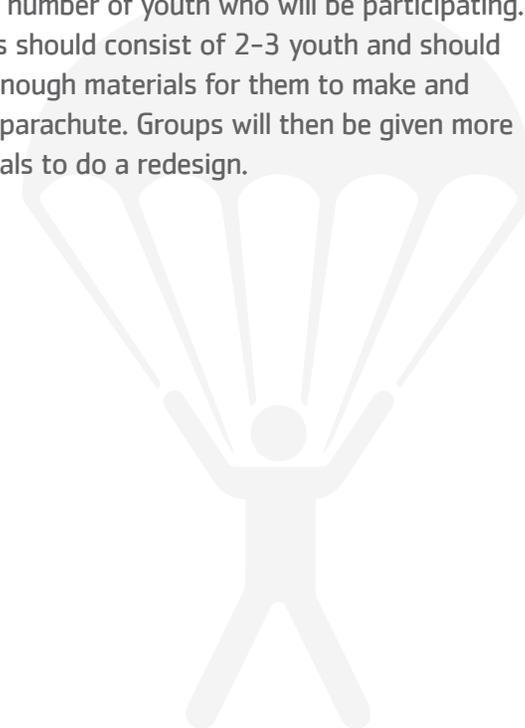
- Coffee filters – 2 per participant
- Paper Clips – 8 per team
- String – 4 pieces per team
- Scissors
- Tape or sticky dots – 4 pieces per team

IMPLEMENTATION NOTES:

- In this activity youth are using their investigation and design abilities to design a parachute that addresses a specific challenge. They're thinking about design and creating a plan to investigate a challenge.
- Science learning can be very effective when it's grounded in a task that supports multiple predictions, explanations, or positions. In such a setting, youth have reasons to "argue" (agree or disagree) and back up their positions with evidence.
- The skills learned here— observations, questioning, planning an investigation, sharing results and having a reflective discussion— are all important pieces of inquiry.

PREPARATION:

Before the activity, organize the materials based on the number of youth who will be participating. Groups should consist of 2-3 youth and should have enough materials for them to make and test a parachute. Groups will then be given more materials to do a redesign.



At the Y, we believe in a holistic approach to youth development so that all children reach their full potential and become competent and healthy adults. **Find more activities at [yexchange.org/STEM](https://www.yexchange.org/STEM)**

PROCEDURE:



1. ENGAGE AND CONNECT

 2 MINUTES

Begin by asking:

- How many of you have ever seen a parachute? Can you describe it for us?
- If you were going to design a parachute, what do you think would be some of the important things to think about?



2. INTRODUCTION AND SET UP

 5 MINUTES

Give youth the following information:

- We're going to work in groups of two or three to design and test parachutes. The challenge is to design a parachute that stays in the air the longest. Supplies are available for your first design. Be sure to complete the handout with your tests of your first design.

Share the following instructions:

- Look at the materials you will be using – a coffee filter, string, sticky dots and paper clips.
- Each group should take some time to think about a design that will use these materials and keep their parachute in the air the longest. If you do not have a way to measure time (watch, wall clock, etc.), you can count as a group (one one-thousand, two one-thousand, etc.) to keep your time measurement consistent.
- Make sure each group member is contributing!
- You will have about 15 minutes to determine your design, create your parachute, test it more than once, and record your findings. I will let you know when you have only five minutes left.



3. QUESTIONING/REASONING

 38 MINUTES

Make sure each group has materials and the handout. Walk around asking the following questions needed to further their design or investigation:

- How did you decide how to use these materials in your design?
- If your string was a different length, do you think it would make a difference?
- What happens when you test the parachute at different heights? What about dropping it versus throwing it up in the air?
- What role does the paper clip weight play in the parachute falling to the ground?

Check on each group's progress and how they are working through issues to figure out how to design and test as a group. Be sure to make an announcement that they only have five minutes left before uniting as a large group.

Bring the group back together for about 20 minutes to have each small group demonstrate their parachute and share the following:

- How did you determine your design?
- What did you notice when you tested it?
- What is one thing your group learned from this testing?



3. QUESTIONING/REASONING, CONTINUED

 38 MINUTES

Once each group has shared their design, ask the entire group:

- What were the similarities and differences of the designs?
- What do you think made some of the differences in whether it stayed afloat longer? (e.g., length of string, paper clip, whether it was dropped or thrown in the air, etc.)
- What is one thing you want to try in your next design?

Share the following instructions:

- Scientists and engineers test their designs and try again. So, let's try again! Each team will now be given another set of supplies and will talk about how they want to redesign their parachute this time. You will have 10 minutes to work in your groups. Make notes regarding your tests and observations. I will let you know when there are three minutes left.

Walk around to each group as they do their designs. Ask the following questions to get them to think deeper about their designs and the evidence to their conclusions about what they are observing.

- How did you change your design and what made you decide to do that?
- What is different about how you are testing?
- If you could have another material or more of something what would it be and why?
- What about the size of the coffee filter versus the string might make a difference? How would you test that?
- What do you think you might need to do to make this safe?
- What made the difference in improving or not improving the time your parachute stayed afloat?



4. REFLECTION

 10 MINUTES

Process the activity by asking:

- How did you change your designs and what happened?
- What would be your recommendations for the best parachute design?
- What other materials might be used and how do you think they would make a difference?
- What do you think this tells us about how parachutes might work and what is important in their design? Encourage youth to include evidence factors like, length of string, use of weight, size of actual parachute, etc. in their responses.