Design a Parachute to Ensure a Safe Landing

Skydivers rely on parachutes to slow them down as they fall from frightening heights. Parachutes catch air and create drag, a force that works against gravity. Parachutes are usually large and made of lightweight materials, so they create the most drag possible without adding a lot of weight.

1. **Introduce parachutes.** Divide youth into small groups and then deliver the SciGirls® Challenge: Construct a parachute that helps a toy minifigure reach the ground slowly and safely. Briefly discuss parachutes. Has anyone ever seen a parachute before? Can they describe or draw one? (Think of the different shapes, sizes and uses of parachutes.)

2. **Brainstorm and build.** Challenge the youth to construct a parachute using only the materials provided to help their toy minifigure reach the ground slowly and safely. Give groups 10 minutes to brainstorm and agree on a design before they construct their parachutes.

3. **Plan.** Reconvene all the youth. Ask them to discuss how to test their designs against each other to see which design provides the most drag. Discuss how they will set up the tests so the designs can be usefully compared (use a stopwatch, compare two at a time, make sure the parachutes are dropped from the same height).

**POINTER:** This activity is great for practicing a very important STEM skill—changing only one variable at a time as you redesign. Some variables to consider: material choice, parachute size, and length of string. Encourage youth to think of other variables, but remind them to keep everything the same except the one variable they are testing.

4. **Predict.** Before implementing the tests, ask the youth to make predictions about which parachute will drop to the ground the slowest. Why?

5. **Reflect.** After the tests, ask the youth to consider the results. Were they in line with their predictions? Why did one parachute fall slower than another? Allow youth to come up with and present possible explanations.