STEM Kit!
Compliments of Fairport Robotics!

This month's kit:

Washer Parachutes!

In this kit, you will make washer parachutes using the enclosed supplies!

Materials: 1 napkin, 1 coffee filter, 4 long pieces of string, 2 short pieces of string, 1 washer
Not included: tape, 2 Lego Minifigures

Make a hypothesis (a guess about what will happen): You will be making two parachutes with two differently shaped canopies: one with a square napkin and one with a circular coffee filter. Both have the same area, which means they are different shapes but are made of the same amount of "stuff." Notice that they feel a little different from each other: the coffee filter is a bit more stiff than the napkin. Think about the shapes and material of each. Which parachute do you think will take longer to hit the ground?

Directions:

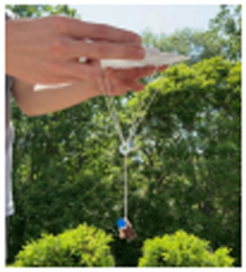
1. Unfold your coffee filter. Take one piece of string and tape it near the edge of the coffee filter so the string lines up with the fold you undid. Next, take one of your washers and thread the other end of the string through the hole in the washer. Then, tape the other end of the string across from the first end, near the edge of the filter.

2. Tape another piece of string to the edge of the coffee filter, lining it up with the other crease you unfolded. Thread the other end of this string through the same washer from step 1, then tape it to the coffee filter so it makes an imaginary + sign, as shown. Voilá!

3. Now repeat steps 1-2 except with your napkin instead of your coffee filter. Tape the ends of the strings to the corners of the napkin. Make sure both strings go through the same washer!

4. If you want to, personalize your parachutes by drawing some artwork on the napkin / coffee filter. You can also use the two small pieces of string to tie some Lego Minifigures to the washers so they'll hold on!

To launch your parachutes, hold onto the napkin / coffee filter with both hands. Try to keep it flat. Gently let it go to watch it glide!



How do parachutes work?

Parachutes seem to defy (go against) gravity. Why is that? If you completed our marshmallow STEM Kit, you might remember about **forces**, which is a push or pull on an object. Parachutes float because of a force called **air resistance**. Air resistance is a bit like the way water pushes against your body when you're in a swimming pool. Tiny bits of air push against every object traveling through the air. **Air resistance** pushes parachutes up, but they still fall to the ground because the force of **gravity** is greater than the force of air resistance. We used washers in this kit because they are just heavy enough to make the parachutes work.

How does this relate to STEM?

Air resistance is one of the most important **forces** in science. Scientists have to consider (think about) air resistance when designing super fast cars, airplanes, rockets, and even roller coasters.

If you enjoyed this STEM activity and love to be creative, consider joining a Fairport FIRST Lego League team or Fairport Robotics Team 578, Red Raider Robotics! For more information, email us at info@fairportrobotics.org!

Stay tuned for a new STEM activity next month!