Donating an Organ

Organ donations save lives every day. Here is how the process works:

1. An organ donor passes away.
2. The organs are collected and tested. The organs are tested to make sure they are healthy and free of disease. The organ donor's blood type, age, and any other important information is noted and recorded.
3. The test results are ran through a database called the Organ Transplant List.
    a. This is a list full of people that need an organ transplant. They are on this list because one of their organs, like their liver or kidney, is failing.
    b. The organs must have the same blood type, and must be of similar size.
4. If there is a match, the organ is transported to the location of the person that needs the organ.
5. The recipient undergoes surgery to transplant the donor organ.

Drones

Organ Transport Drone

Follow the steps below to create your own organ transport drone and cooler!

Step One: Build a Drone

Use art supplies and building materials to build a drone!

Your drone must meet the following requirements:

- Be able to operate in different weather conditions
- Have a spot for a GPS tracker so that it can share its location
- Have an attachment point for the cooler to hang beneath it by a rope or string

Step Two: Build an Organ Cooler

Use art supplies and building materials to build a cooler to transport the donor organ. This cooler must protect the organ from weather and falls! After you build your cooler, you will test it to see how well it protects the organ from shaking, falling, and rain!

Your cooler must meet the following requirements;

- Must be smaller than the size of a shoebox.
- Must have a spot for the organ to sit inside.
- Must have a lid with straps to keep the lid shut.
- Must have an attachment point on the lid to attach to the drone with rope.
- Must have padding inside to protect the organ from shaking, rain, and falling!

Attach your rope from your drone to your cooler. Make sure that when you hold your drone in your hand, the cooler hangs beneath it and the lid stays on. If not, make adjustments now.

Step Three: Test Your Cooler

In this step, you will perform three different tests to see how well your organ is protected inside the cooler. Follow the steps below:

1. Fill your water balloon with water. This water balloon represents your organ that is being transported.
2. Place your water balloon inside of the cooler and close the lid. Use the straps you designed to keep the lid on the cooler.
3. Use a ruler or meter stick to measure 4 feet in the air. Mark this location on the wall with tape. This is the height that you will drop your cooler from.

Testing Stage 1: Shake Test

1. Stand with the drone in your hand. Make sure that your cooler hangs from the drone and that the lid stays on.
2. Start your timer.
3. Vigorously shake the drone up and down and side to side. This will shake the organ around in your cooler. This simulates a really windy day!
4. Shake the cooler for one minute.
5. Set the cooler on the floor and open the lid. If your water balloon didn't pop, you passed Stage 1 of testing!
6. Record your results in the data table.

Drones for Organ Transport

STEM CAREER ADVENTURES

Testing Stage 2: Drop Test

1. Stand next to the wall on a step stool with your drone in your hand. Make sure that your cooler hangs from the drone and that the lid stays on.
2. Ask your group members to stand back and make sure that your cooler is hanging at the tape mark that you made on the wall at four feet.
3. Drop the drone straight down onto the ground below.
4. Open the lid of the cooler and check your water balloon. If your water balloon didn't pop, you passed Stage 2 of testing!
5. Record your results in the data table.

Testing Stage 3: Rain Test

1. Stand with the drone in your hand. Make sure that your cooler hangs from the drone and that the lid stays on.
2. Start your timer.
3. Pour water on your cooler. This simulates rain.
4. Open the lid of the cooler and check your water balloon. If your water balloon is dry, you passed Stage 3 of testing!
5. Record your results in the data table.

	Did your cooler pass the test? (Yes or No) Include other observations from your trial
Test 1: Shake Test	
Test 2: Drop Test	
Test 3: Rain Test	