



TAKE IT FURTHER

Activity 2: Incoming! Fragile Fruity Payload

Time required: 60-80 minutes

YOUR CHALLENGE

Prepare for a soft landing! Using the same Food Transportation Device (FTD) you built in the original experiment, your goal is to design a new and improved payload container that can safely transport a payload of fragile food to the same target.

MATERIALS


To complete the activity, each team will need the following:

- 1 FTD Construction Kit
- 4 raspberries
- Packing tape
- Scissors
- 1 Rocket Launcher Kit
- 1 Launch Pad Set-Up
- Safety goggles for each participant

Unless you feel that you can construct a better design or your original design was damaged, you can use the same propulsion system and FTD — as well as the same construction kit — you used in the original experiment.

Step 1: Identify the problem.

In the original experiment, you were asked to design, build, and test a Food Transportation Device (FTD) that could accurately deliver food to the island. Take it further by designing a payload container that can accommodate a more fragile payload — in our case, four raspberries.



THINK ABOUT IT

- How will you change your original design to accommodate the fragile cargo?
- What kinds of materials do you think might offer protection?
- How will your design absorb shock?





Step 2: Divide and design!

Design, construct, and test your new payload container. Be careful handling your raspberries, as they are a delicate fruit that can rupture and damage easily!



Use this area to **create sketches and designs of your proposed payload container.**

A large rectangular area filled with a light blue grid, intended for drawing and sketching a design.



Step 3: Launch your FTD.

Similar to the original experiment, your goal is to land in the target area. However, you will receive points not only for accuracy, but also whether or not your payload has been damaged – minor damage is -1 point, severe damage is -3 points.

Repeat this step as needed, until you achieve a design that works. You may want to have extra raspberries on hand... just in case your fruit ruptures.

Step 4: Record your data.

Record your data using the chart below.

Team Name: Location of Launch (indoors/outdoors) Team Members:				FTD Name: Wind Conditions (if outdoors):		
Trial #	Angle of Launch Tube (in degrees)	Position of FTD on Launch Tube (all the way, half-way down, ¼)	Person Stomping on Bottle	FTD Design and/or Adjustments Since Previous Launch/Trial	Points Scored (0, 1, 3, or 5) and Observations	Damage to the Payload (-1 or -3)
1						
2						
3						
4						
5						
6						
7						
8						



SAFETY FIRST!

Always wear safety goggles when launching your FTD.





Step 5: Review and reflect.

As you are completing your trials, keep track of what is working and what is not working:

What Works (Ex. fresh bottle)	What Doesn't Work (Ex. fatigued bottle)



TALK ABOUT IT

- What worked well? What didn't?
- Were there any common features of successful designs? Unsuccessful designs?
- What is more challenging about using raspberries instead of raisins?
- How could the challenge have been made easier?

Step 6: Apply what you learned.

Transporting foods like raspberries, blueberries or tomatoes can be a delicate matter. What did you learn about food transportation systems and processes in this activity?

