2017 Worthington STEM Day Design Challenge Sponsored by

The Challenge:

A variety of companies have been experimenting with using drones to deliver a variety of goods. For this to be effective, the goods must be packaged in such a way that they will not be damaged when the drone drops them onto the ground below. The package should also be light-weight, so that it is easy for the drone to carry. The companies also want the packaging to be inexpensive.

Your job is to design, build, and test a container that will protect a piece of fragile cargo: a single Pringles chip.

Materials:

Each team will receive a budget of 10 Science Day Dollars to spend on supplies at the Science Day Store. Only materials available through the Science Day Store may be used for the container. The supplies are:

Item	Cost	Weight
6" x 12" of corrugated cardboard	$2	25g
8.5" x 11" piece of stock card paper	$2	10g
8.5" x 11" piece of copy paper	$2	5g
3" of tape (K-3 only)	$2	<1g
1 Test Pringle	$1	2g

The Science Day Store does not take returns, so be sure that you want to purchase an item before you do so!

Final Testing will cost $1 but includes a Pringle. If your team does not need a Pringle chip the cost is still $1

Teams will also have access to scissors at no charge. *(Coaches to help cut for younger kids, too)*

How to Win:

There are three parts to the final score: success of the design, cost, and mass.

Success: When instructed to do so by the judges, each team will drop their container from table height. The Pringle will be inspected. If the Pringle is undamaged, the team will then drop the container from the first landing of the stairs. The Pringle will be inspected again, and if it is undamaged, the team will drop the container from the second floor. The team will receive one point for each successful drop.

Cost: The team will have half a point added to their score for each dollar remaining in their budget.

Mass: The team will have the mass of their container, in grams, score points based upon this chart:

Range (g)	Pts
0 - 10.0	5
10.1 - 20.0	4
20.1 - 30.0	3
30.1 - 40.0	2
40.1 - 50.0	1
50.1 - Above	0

Other Rules:

- Teams will have **20 minutes** to develop a final design.
- When the time is up, teams must deliver their containers to the judging area and may not touch their devices until instructed to start the test by the judges.
- The container must be easily opened after each drop so that the Pringle can be inspected for damage.
- No outside resources are allowed, including internet access, texting, or consulting with others not participating in the event.

Note: