LOST
Balloon Fest Experiment Design
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Purpose:
The purpose of the project is to figure out the relationship between the diameter of a parachute and the speed/ time it takes to make contact with the ground. We hope that with the data we collect we will be able to create a ratio that will help to determine at what speed a certain weight will fall with a certain sized parachute.

Method:
Our experiment will be fairly simple as far as data collecting goes, because we will not be using LabPro. All we will need is a stopwatch, and altimetry equipment for data collection. We will send the balloon up with our gondola/release mechanism. When it reaches its maximum height, we will take the data needed in order to find out the balloon's height, and then we will release the "paratroopers" via R/C from the ground. As soon as they are released, the timer will be started, and if there is a wind, the crew will begin to follow the descending parachutes. When each one hits the ground, a time will be recorded and the time will be written down next to the corresponding parachute, each of which will be different colors. We will then pull the balloon back down, and we will do our calculations that we need to do.

Safety Precautions:

Our experiment is to determine the relationship between the diameter of a parachute and the average speed of it's decent with a constant weight. Basically to do this we will have to drop weights using a servo. To ensure that these weights will not fall to early and possibly hit someone, we will drill a hole through each of the weights and string a wire horizontally through the middle of the weights where the holes will be drilled. These weights are going to be 327 grams each so it will not be very dangerous, but we will still make sure that the parachute is very strong and we will alert everybody to stay out incase the line we are dropping them on breaks which is a very low possibility. The reason that is will be a low possibility because there will be a guide string that will connected to the gondola and the 1,000 meter string so we will have a fixed falling distance that doesn't change. There is still the possibility that the string rips somehow, which is highly unlikely, or the rip stop nylon rips, which will never happen. If that does happen then we will have a whistle that we will blow and everyone will take cover or run far enough away from under the balloon.

Research:

You can basically make a parachute out of anything whether it be a garbage bag or out of regular tissue paper. However, one of the more effective materials used is nylon. It is efficient and unlike

tissue paper won't rip in the wet or foggy weather. Rip stop nylon is the best material for parachutes because when we attach the weights the hole will not rip on us.

Hypothesis A1:

Using each weight's speed, we should be able to create an average ratio of area to average velocity.
Test 1: Using a few simple equations, we can figure out the ratio.

Hypothesis A2:

Using that ratio, we should be able to figure out the average speed of a parachute with a different size.
Test 1: We could there for be able to insert a formula to that data we have and find it out.

Hypothesis A3:

Our data should show a straight diagonal line in a graph that shows 1/Area Vs. Velocity^2.

Test 1: We can use a formula to find out two graphs
Test 2: We can from there find out which one makes more sense.
Test 3: We can find which one goes through closer to zero.

Materials:

~Stop watch
~Color Coded Parachutes
~Weights (1/2 lb?)
~R/C Remote
~R/C Servo
~Battery Pack
~Receiver
~1000 ft of cord
~Cord holder/winder
~Gondola/ Release