BALLOON FEST

8R2F

WHAT IS THE ALTITUDE OF THE BALLOON AT A SPECIFIC TIME?

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What is the altitude of the balloon at a specified time?

Purpose

The purpose of our experiment is to accurately measure altitude of a balloon and to compare it to the amount of tether let out. To see how the environment affects the balloon altitude.

Objective

The objective of the experiment is to create a ratio of altitude of the balloon to the amount of tender let out to see how much string length is lost to weather conditions above the launch site.

Hypothesis

-For every 300 ft. of tether let out, the altitude of the balloon will be 200 ft..

-The ratio of tether let out and measured altitude will change depending on wind and weather conditions.

-The amount of tether let out will be significantly larger than the actual height.

Method

Take two angles simultaneously of the balloon and of the other stations from two different stations on the ground an equal distance from each other. Then out 100 ft. of tether and hold it there for 10-15 seconds taking measurements. Repeating until the tether runs out. The expected results are that the actual altitude of the balloon will be calculated using the data we get. Negative result would mean results over 900 feet. If we get these results the data that was collected was incorrect and there wouldn't be a way to correct it but by taking more than one measurement, maybe three or four different ones during the balloon flight.

Equipment

- Two theodolites
- Logs
- Pencils
- Two people
- Stop watch
- Calculator
- Measuring tape, GPS, or laser range finder
- Calculator with program for calculations

Protocol

Before the launch;

Set up stations by measuring each station 1000 feet from each other. Make sure that the horizontal angles of the stations are coinciding with each other. Make sure the height differences of the stations are as small as possible. Be sure that everything we need is set up and ready for use.

During the Launch;

-Start Stopwatch

-Stop Balloon every 100 feet and take angle measurements from each station at the same time

-Record abnormalities in Flight Log

After Launch;

-Graph measurements on a graph (Tether let out vs. Measured altitude)

-Calculate the altitudes

-Write conclusion

-Present Data