Balloon Fest
Blue Dinosaur
Instrument Validation

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Abstract: To measure temperature with increasing altitude by the aid of a thermometer, labpro and a camera.

Purpose:

Our team's purpose is to obtain a change in temperature as the altitude increases. We have planned to do this using a thermometer, a labpro, and a camera placed in a wooden gondola that is attached to our hot air balloon.

Procedure/Setup:

- ✓ The hot air balloon:
  - ❖ Get the hot air balloon and fill it up with helium.
  - ❖ Make sure to have previously calculated the lift and the amount of helium necessary for a successful flight.
  - ❖ Attach on the string to the balloon.
  - ❖ Make sure that the string is properly placed around the winder with every hundred feet marked with Sharpie marks and flags.
  - ❖ Attach the gondola.
  - ❖ Check for leaks in the hot air balloon, rips in the string, the connection of the gondola, and fixation of all the equipment in the gondola.
- ✓ The gondola:
  - ❖ Place the labpro all connected neatly in the bottom compartment of the wooden gondola.
  - ❖ Check that the labpro has batteries. (Note: Keep a fresh pack of batteries in case.)
  - ❖ Make sure that the labpro is properly programmed to the DataMate Program and functioning.
  - ❖ Next, place the barometer, already connected with labpro, in one corner, safely attached with a piece of Velcro.
  - ❖ Next, place the thermometer in the opposite corner of the barometer, safely attached with a piece of tape.
  - ❖ Put the camera in the top smaller compartment, making sure that it is turned on, its lense protruding through the wooden plate, and all set on the video option.
  - ❖ After making sure everything is all set and working, connect the gondola with the hot air balloon with the aid of the string.
  - ❖ Again, check that the string is taut, without any rips, properly measured in every hundred feet with flags.
  - ❖ For the measures, record in Fahrenheit with every fifty feet.

Return of the balloon:

- ✓ Upon the return of the balloon, take the gondola and stop the recording equipment.
- ✓ With the help of wires, connect the labpro to the computer/lap-top.
- ✓ Using LoggerPro software, get the data and make graphs.
- ✓ Lastly, prepare the power-points.

Data:

We were not able to obtain any data due to the leaks in our air jar and some technical difficulties with the barometer and the labpro. But we do have learned what problems and difficulties to fix and to look out for the next time. For example; play around with the labpro and learn and understand the program DataMate and how it is used. Also, to get familiar with the program LoggerPro on the computer, this would be used to obtain the data from labpro.

Analysis:

Same reason as stated above.

Conclusion:

Same reason as stated above.

Resources of variance:

- Wind
- Storm
- Cloud cover
- Variance in sunshine.

Malfunction:

- Labpro not working.
- Wiring not connected.
- Camera not functioning/not on video option.
- Thermometer not attached properly.

Measure Reliability:

- All equipment properly connected.
- All equipment turned on and working.
- No leaks.
- Wiring is proper.
- Everything proper.

Precision and Accuracy:

The correct average of the total.