Da Dumb Balloon

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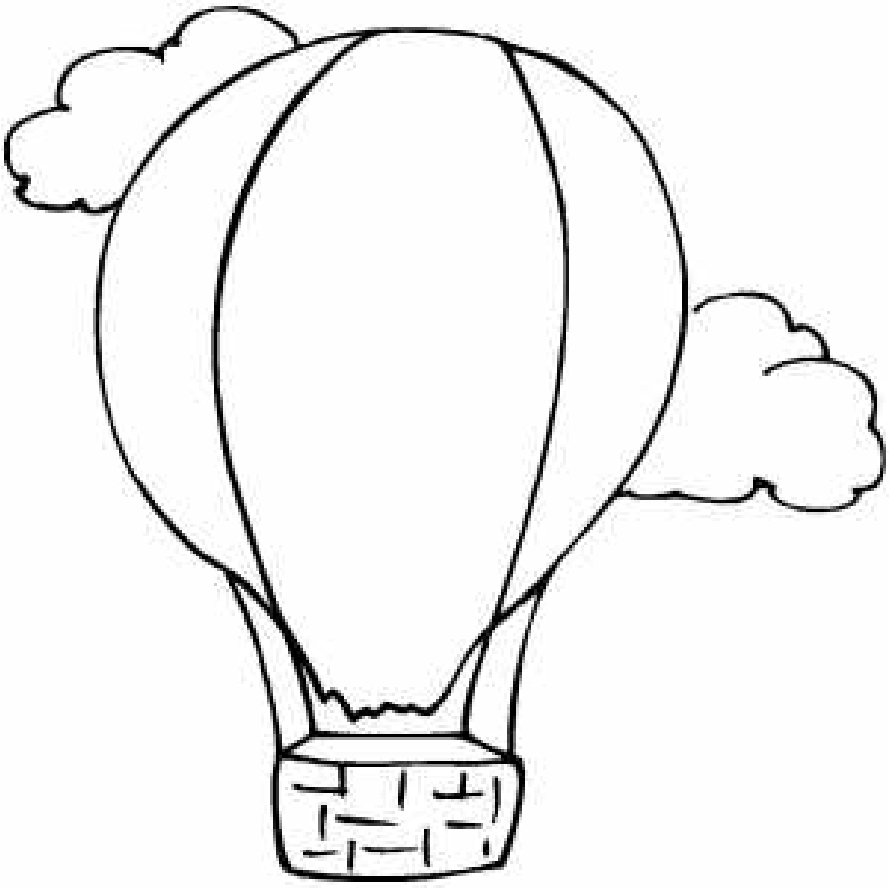
Period 5

Balloon Fest Experiment Validation



Abstract: The object of this experiment is to learn the uses and tests the limitations of the equipment and its frequency as distance changes. This validation contains all principles needed. The validation includes tests, research, and data for our experiment.

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Balloon Fest Equipment Validation

Description of Experiment: Sound frequency varies with distance and in this experiment we plan to test how sound varies when the distance taken is not horizontal but vertical.

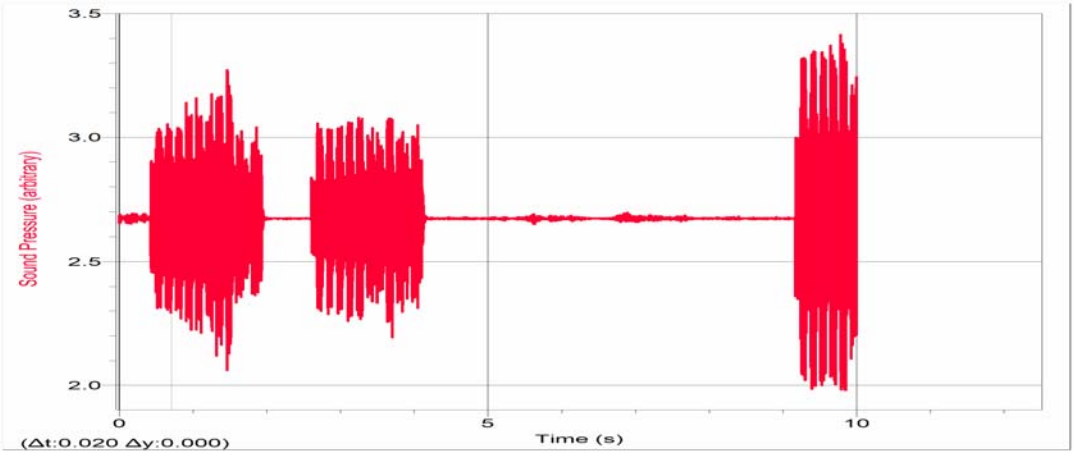
Equipment to be Tested: A microphone hooked up to a Labpro connected to a laptop with the downloaded program Loggerpro on it. And from that, to see if the microphone can pick up reception from the hand-held radio.

Research: zone.ni.com/devzone/cda/tut/p/id/1369.
en.wikipedia.org/wiki/Sound_level_meter
FFT
LabPro, LoggerPro
Sound Pressure Level is 10 times the logarithm of the ratio of the time-mean square pressure to the square of the reference pressure. Standard reference pressure is 2 x 10(to the -5 power) Pa.*
Human hearing range is from 10Hz to 20Hz
Units: sound pressure (p) in Pascals
sound pressure level (L sub 'p' or SPL) in decibels (dB) are *
can be expressed in terms of linear, frequency-weighted, 1/N-octave frequency brand or narrow frequency band (FFT) levels.
Measurement of sound pressure is based on the use of a microphone that is used as a transducer to create a voltage signal that is proportional to the root mean square pressure at the point in space where the microphone is located. This voltage signal can be used to study the amplitude and frequency of these pressure variations that create the sensation of sound. Due to the large range of magnitudes of these pressure variations that humans can sense as sound (1:1,000,000), the voltage signal is typically passed through a logarithmic detector. A logarithmic detector approximates the response of the human ear to such pressure variations, and results in a measurement range that is reduced from a factor of a milling to 0 dB t0 120 dB. The result of the measurement is expressed as the sound pressure level, measured in decibels (dB), relative to a reference level (0dB=2x10* Pascals). Relationship: L(sub 'p') = 20 ** log p/pref ~ p = RMS pressure at the microphone, pref** = a reference pressure of *

Test Plan:

Step 1: is all done out on the procedure. Without the balloon, just someone walking a distance away with the hand-held radio.

Data:



Analysis: Our results of the data showed that our equipment and experiment worked. We got a look at how the constant the sound frequency varies with each distance. Each distance carried a different sound frequency as it elevated.

Conclusion: We concluded that the experiment would do better if we possessed a constant sound frequency instead of someone's voice or them whistling. Like a cell phone tone that can be amplified to a dramatic degree. And the experiment can be improved if there wasn't so much background noise and if we could do the entire experiment like we would on the day of the event at Balloon Fest the sound from our speaker wouldn't bounce of the walls and the ground, distorting our results being collected by the Logger pro.