

Barometer Validation Report

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Abstract: In our experiment we tested the Vernier Barometer for validation of information. We tested the barometric pressure in our classroom with two different barometers and calibrated them by setting them both at the same pressure by averaging past experiments. We found the Resolution ± 0.0001 kPa, the precision ± 0.2 kPa from each other, and the accuracy ± 0.3 kPa.

Vernier Barometer

Purpose: We intended to calibrate our barometer and make sure that it is accurate through a series of trials and then averaging them out to find the most accurate reading for the classroom pressure. We also want to make the measurements as precise as possible. We will test the resolution of the barometer as well.

Method: To find out what to calibrate our barometer at, we did several tests and found the average of all the tests. The average was 99.52 kPa. Then to make sure that our barometers were precise we took both of them and found the pressure in the classroom. If one barometer was giving us a different reading we would calibrate that one individually to make them both as accurate and precise as possible. To find the resolution of the barometers we looked at the graphs and zoomed in until we could see what the smallest step in the measurements were 0.01 kPa.

Prediction: We predict that the electronic barometers would yield almost perfect precision and accuracy the way that they came, but they had been calibrated for a different air pressure. We had to recalibrate them and then test for their precision through many tests. To find out how accurate the barometers were we would need to know what the average air pressure in Paso was then compare it with our results.

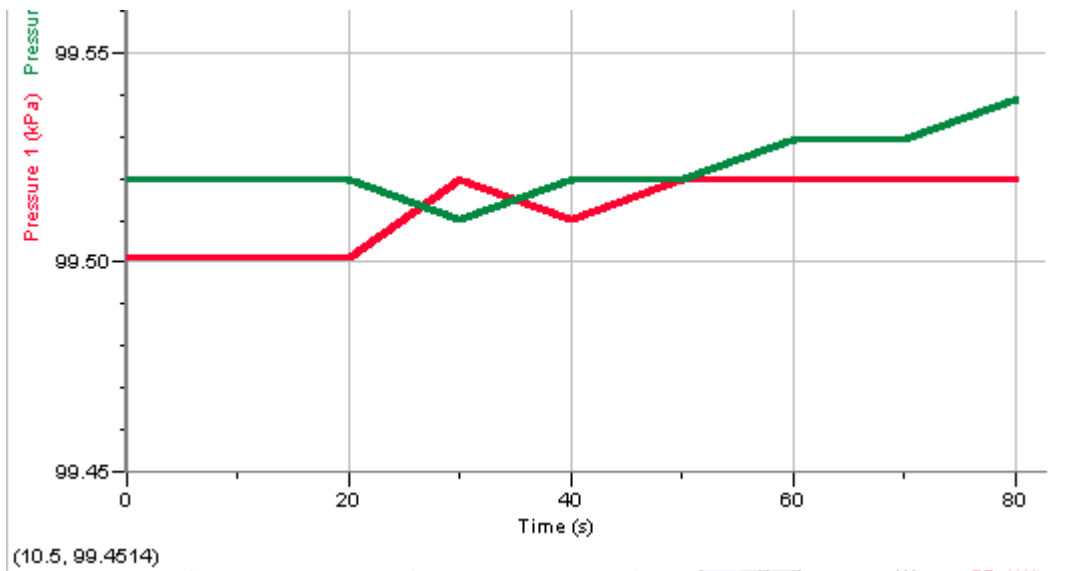
Data:

Trial 1	Trial 2	Trial 3	Trial 4	Trial 5
99.4	99.6	99.5	99.6	99.5

Average: $99.4 + 99.6 + 99.5 + 99.6 + 99.5 = 497.6 / 5 = \mathbf{99.52 \text{ kPa}}$

Sources of Error: We found that errors came when a door in the classroom was opened, or if wind was blowing into the gondola the air pressure would seem higher than if the sensor was outside. We also found that if you put your finger in front of the sensor, the air pressure that the sensor would pick up would be different than the actual air pressure.

This is a graph of what happened when the barometer was in the gondola when there was a dynamic pressure involved. The green line was the barometer in the gondola and when the wind came in the barometric pressure went up.



This Graph represents the resolution of the vernier barometer. The smallest step in the data is +/- 0.0001 kPa.

