

Sound Lab

Physics SL 12

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1 Introduction

In this experiment, we are testing the different wavelength of the different pitchfork we use to create a cycle. Also to test the reliabilities of the result from comparing calculations results and real-life experiment results. In order to try out the exact point of the wave length by changing the water level in the measuring cylinder.

2 Apparatus

2.1 results from calculations

Items	Usage of the Item
Large Measuring cylinder	For measuring the water level and contain water
Water	Use to change the water level in the Measuring cylinder
Ruler	To Measure the wavelength from the top of the cylinder
Pitchfork	To create sound for experiment

Table 1: Name and the use of Apparatus

3 Hypothesis

The real-life experiment would be holding the similar results as the calculations, this experiment cannot be fully accurate so i had to say similar. The determine of the distance is by using human judgments to figure out the perfect sound wave the experiment can get for each pitchfork. So i believe that the experiment can get as close as the result on calculations.

4 Steps of the experiment

Steps	Instructions
Step one	Pour water inside the measuring cylinder
Step two	use a pitchfork and hit it against a soft object to create sound
Step three	while the pitchfork is ringing, locate the pitchfork on top of the measuring cylinder
Step four	Increase the water level and repeat steps two and three
Step five	stop the experiment until finding the greatest sound after changing the water level
Step six	measure the distance from the top of the measuring cylinder to the water level to find wavelength.
Important *	Repeat steps one to six for all different Frequency of pitchfork.

Table 2: Instructions of the experiment

5 Formulae

$$V = f \times \lambda$$

$$Velocity = frequency \times wavelength$$

6 Data

6.1 results from calculations

Frequency of Pitchfork (hz)	wave speed (m/s)	wavelength (m)
512	0.664	0.166
384	0.888	0.222
256	1.332	0.333

Table 3: Results after calculations

6.2 results from experiment

Frequency of Pitchfork (hz)	wave speed (m/s)	wavelength (m)
512	0.66	0.165
384	0.86	0.215
256	1.28	0.320

Table 4: Results after real testing experiment

7 Analysis

7.1 Data analysis

As we compare two tables on the result section above, we can clearly see the results are different compared to the calculations. The data seems to be lesser than the calculations, the result we get is not very accurate and contains many errors. Also when we use this data, we found out that the pitchfork might have some mistake on listing the frequency. For example the result is more likely to be 500 Hz instead of 512. Due to these data, we understand that the result might not be very reliable from the experiment and the calculations, we need an ideal situation to do this experiment with precise equipment to have better results.

7.2 Possible experiment error and data collection

- It is not accurate enough to use a ruler to check and find the wavelength, it contains error by eye and is not precise enough for the operations.
- The perfect sound that can produce from a wavelength is totally depends on people's hearing, people's judgment. It is a mistake for doing so, because people cannot get the most accurate point, instead we are purely guessing for the better sound.

8 Conclusion

The experiment clearly demonstrates that the real-life situation cannot be easily determined by the calculations, or theoretically speaking. Because the calculations are all very ideal circumstances, and the result is not accurate. However, this experiment provides us proof that we can find a full wave sound by using this type of experiment.