

Name: \_\_\_\_\_

## 12.3

# Natural Frequency and Resonance



Question: What is resonance and why is it important?

### 1 Setting up the experiment

There are no questions to answer in part 1.

### 2 Waves and harmonics

Record your data from part 2 in Table 1.

**Table 1: Frequency, harmonic and wavelength data**

Harmonic #	Frequency (Hz)	Wavelength (m)	Frequency times wavelength (m/sec)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

3

### Analyzing the data

- a. In one or two sentences describe how the frequencies of the different harmonic patterns are related to each other.

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- b. Why is the word *fundamental* chosen as another name for the first harmonic?

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- c. In one or two sentences, describe how the product of frequency times wavelength changes compared to the changes in frequency or wavelength separately.

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- d. If the frequency increases, what happens to the wavelength? Your answer should say if the wavelength changes and by how much it changes compared to the change in frequency.

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