

# Good Vibrations



**QUESTION:** How does a string's length and thickness affect its sound when it is plucked?

**MATERIALS:**

meter stick  
scissors

yarn (multi-strand)

**PROCEDURE:**

1. Cut a piece of yarn approximately 200 cm long. Wrap the yarn around your right and left index fingers and touch your fingers to your ears so your partner can pull the yarn tight to a length of about 100 cm.
2. Have your partner pluck the string and listen to the sound produced.
3. Now wrap the yarn around your fingers so that when you touch your ears, your partner can pull the yarn tight to a length of about 50 cm.
4. Have your partner pluck the yarn again. Compare the sound produced by the 50 cm yarn with the beginning sound of the 100 cm length of yarn. Record your observation in the data table.
5. Repeat Step 3 with the yarn stretched to a length of 25 cm.
6. Have your partner pluck the yarn. Compare the sound produced by the 25 cm yarn with the beginning sound of the 100 cm length of yarn. Record your observation in the Data table.
7. Unwrap the yarn from around your fingers and separate it into a length made up of 1 only strand. Wrap the single strand of yarn around your index fingers so your partner can pull the yarn tight to a length of about 100 cm.
8. Have your partner pluck the single strand of yarn. Compare the sound produced by the single strand of yarn with the multi-strand of yarn of the same length that you began with in Step 1. Record your observation in the Data table.

**DATA:**

LENGTH	OBSERVATION
50 cm multi-strand	
25 cm multi-strand	
100 cm single-strand	

## **PS – Activity #13**

### **QUESTIONS:**

1. Define pitch.
2. What happens to pitch as the length of the yarn is shortened? Why is there this difference?
3. What happens to the pitch of a length of single strand yarn in comparison to the pitch of a multi-strand yarn of the same length? Why is there this difference?
4. Why does holding your finger on a guitar string cause the pitch to go higher?
5. Is it possible to change the “pitch” of a light wave? Why or why not?
6. Get 100 cm lengths of several different materials, such as kite string, monofilament line, sewing thread, twine, or similar materials. Determine the order of the samples by following the procedure of the lab . Write the names of the samples in order from the one with the lowest pitch to the one with the highest pitch.