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

Pendulum Lab

**Purpose :** To investigate the relationships between the properties of a wave (amplitude,

frequency, and period) using the movements of a pendulum.

**Materials:** (For groups of 2)

* 1 00 cm piece of string
* 1 metal washer
* 5 cm piece of masking tape
* 1 ruler
* 1 meter stick
* timer that indicates seconds

**Background:**

**Amplitude** is the distance between the position of rest and the highest position in the arc.

**Frequency** refers to the number of times an object moves back and forth in a given amount of time.

A **Period** is the time it takes for one complete swing back and forth.

Period = frequency ÷ time in seconds

**Procedures:**

1. Create a pendulum by tying a washer to one end of the string.
2. Tape the other end of the string to the ruler so that 80 cm of string hang down.
3. Tape the ruler to a table so the pendulum extends about 5 cm from the edge. (you may have to put the ruler on a few books to get string off the floor, be creative, use what you have around you).
4. Put another meter stick on the floor with the 0 under the pendulum.
5. Pull the end of the pendulum back so the string is pointing at the 60 cm. mark on the meter stick on the floor. Let go, and record how many times (*frequency*) the pendulum makes a complete back and forth swing in one minute. Record your data in the chart on the back.
6. Repeat Step 5 pulling the pendulum back 30 cm.
7. Repeat Step 5 pulling the pendulum back 15 cm.
8. Shorten the string to 40 cm and repeat STEP 5.
9. Shorten the string to 20 cm and repeat STEP 5.
10. Shorten the string to 10 cm and repeat STEP 5.

Data Record

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| --- | --- | --- | --- |
| **Length of** **String** | **Amplitude** | **Frequency** | **Period****P = F/T** |
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Questions: **ANSWER IN COMPLETE SENTANCES** (POINTS WILL BE DECUCTIVE IF YOU DON’T)

1. Compare amplitude with frequency.

1. Compare amplitude with period.

1. Compare frequency with period.
2. How does the length of the string affect frequency?
3. How does the length of the string affect period?
4. How does a pendulum compare to a wave? Compare the properties of a wave with the movements of a pendulum.