Name: _____ Unit IV
Mr. Willis Work, Power and Machines
Conceptual Physics: _____ Need extra help?
Date: _____ Check out *http://www.bayhicoach.com*

IV

Pendulum Lab

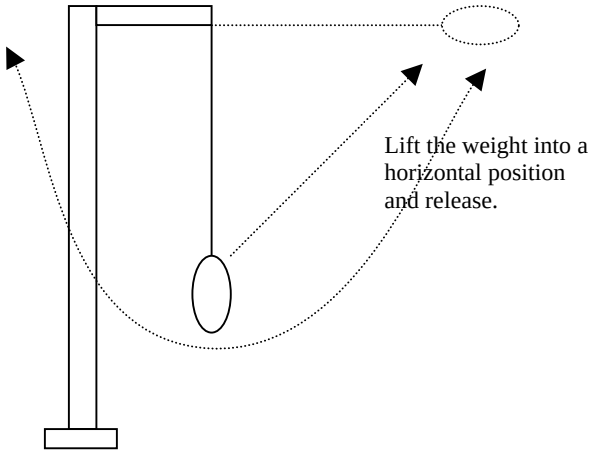
Objective: The purpose of this lab is to construct a pendulum and study the kinetic and potential energy generated by that pendulum.

Procedure:

1. Tie a string on ring stand so that the string hangs down 40 cm.
2. Hang a small weight on the end of the string.
3. Lift the weight, keeping the string taut, to a position level with the ring on the ring stand. Release the weight and count the number of swings in two minutes. (You may need to steady the ring stand to prevent it from tipping or moving during this lab) One swing is back and forth. Do not interfere with the swinging motion of the weight during the two minute time period. Record the data in the data table below.
4. Remove the small weight and replace it with the larger weight. Repeat the procedure for the large weight making sure to keep count of the number of swings. Enter this data in the data table.
5. Shorten the string to 20 cm. Using the procedure above, determine the number of swings for each of the two weights on the shortened string and enter that data in the table below.

Data Table

String Length (cm)	Weight Size	Number of Swings During Two Minutes
40	small	_____
40	large	_____
20	small	_____
20	large	_____



Questions:

a. Which string length caused the pendulum to make more swings in two minutes? _____
b. In general, what effect did shortening the string length have on the pendulum? _____
c. Examine the data for the 40 cm string length. Did changing the mass have any effect on the number of swings during two minutes? _____
d. Examine the data for the 20 cm string length. Did changing the mass have any effect on the number of swings during two minutes? _____
e. In general, what effect did increasing the mass size have on the number of swings during two minutes? _____

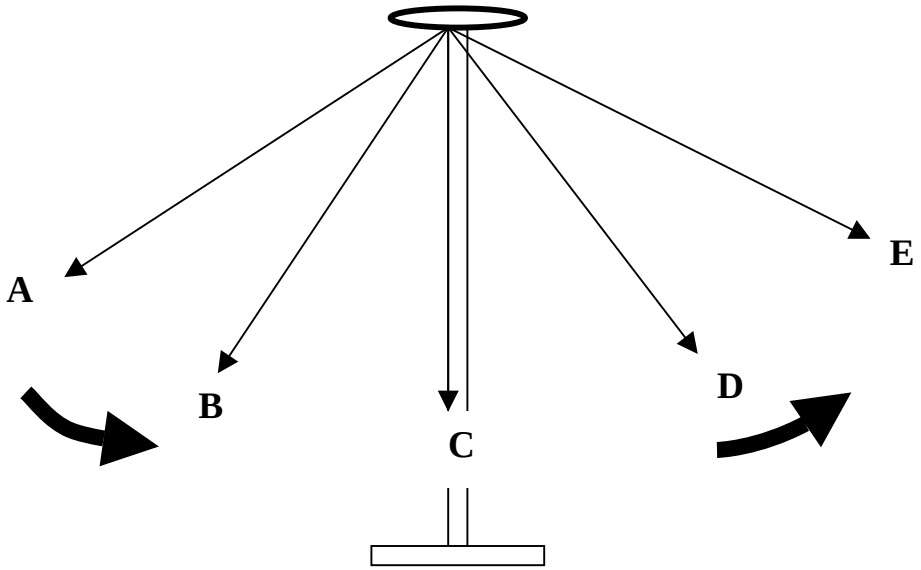
Conclusion:

_____

_____

Post Lab: Examining the Potential and Kinetic Energy of a Pendulum. Mechanical energy is the total of kinetic and potential energy in a system.

Directions: Complete this assignment after finishing the Pendulum Lab.



The drawing shows a pendulum that is swinging from left to right. The letters A, B, C, etc. show the different positions of the pendulum as it swings. Answer each of the following by marking A, B, C etc. next to description of the position. Look at Figure 5-7 on page 128 in your text book for information.

1. The two locations where the ***potential*** energy is at its maximum. _____ and _____

2. The location where the pendulum has maximum ***kinetic*** energy. This is also the location where the pendulum has a maximum speed. _____

3. The location where the ***kinetic*** energy is increasing. This is also where the pendulum is swinging in a downward direction. _____

4. The location where the ***kinetic*** energy is decreasing. This also where the pendulum is swing in a upward direction. _____

5. The location where the ***potential*** energy is decreasing. This is also where the ***kinetic*** energy is increasing. _____

6. The location where the ***potential*** energy is increasing. This is also where the ***kinetic*** energy is decreasing. _____

7. The location where the pendulum has minimum ***potential*** energy. This is also where the pendulum is at the lowest position or bottom of a swing. _____

8. The locations where the ***kinetic*** energy is at its minimum. _____ and _____