


Name: _____

 PHYSICS	<h2>Assignment:</h2> <p>Pendulums and Energy Online Lab</p>
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Part 1: Potential Energy During the Swing of a Pendulum

1. Fill out the data table based on the swing of the pendulum.

Location of pendulum bob	Distance from the top to the bottom of the bob (cm)	Height of bob compared to the lowest point of swing (cm)	Height of the bob compared to the lowest point of swing (m)	Mass (kg)	Gravity (m/s^2)	Potential Energy (J)
Straight down						
45° angle on the right						
Halfway down to the bottom						
Halfway up to highest point on the left						
Highest point on the left						

2. Determine the potential energy of the pendulum bob when it is hanging straight down. Show your work for the calculation and place your answer in the data table above.

3. Determine the potential energy of the pendulum bob when it is at a 45° angle. Show your work for the calculation and place your answer in the data table above.

4. Determine the potential energy of the pendulum bob when it is halfway down on the right side. Show your work for the calculation and place your answer in the data table above.

5. Determine the potential energy of the pendulum bob when it is halfway up on the left side. Show your work for the calculation and place your answer in the data table above.

6. Determine the potential energy of the pendulum bob when it is at its highest point on the left side. Show your work for the calculation and place your answer in the data table above.

7. Describe what happens to the potential energy of the pendulum as it swings from one side to the other.

8. Predict what will happen to the kinetic energy at each point of the pendulum's swing.

Part 2: Relationship Between Potential Energy and Kinetic Energy

9. What type of energy does the pendulum have at 45° on the right. How do the types of energy (potential and kinetic) compare at this point?

10. What type of energy does the pendulum have when it is halfway to the bottom of the swing? How do the types of energy compare at this point?

11. What type of energy does the pendulum have when it is at the bottom of the swing? How do the types of energy compare at this point?

12. What type of energy does the pendulum have when it is halfway up to the top on the left-hand side of its swing? How do the types of energy compare at this point?

13. What type of energy does the pendulum have when it reaches its highest point on the left-hand side of its swing? How do the types of energy compare at this point?

14. Describe what happens to the potential energy and kinetic energy throughout the swing of the pendulum.

15. What happens to the total energy throughout the swing of the pendulum?

16. Explain how the pendulum demonstrates the concept of the conservation of energy.