

Activity - The Energy of a Pendulum

Problem 1: To explain the motion of a pendulum in terms of conservation of energy.

Materials: pendulum bob
string

Procedure:

- (i) Build a simple pendulum.
- (ii) Let the pendulum swing and describe its motion in terms of kinetic and potential energy.

Questions:

- 1.) Where does the pendulum have only potential energy?
- 2.) Where does the pendulum have only kinetic energy?
- 3.) How does the P.E. at the top of the swing compare to the K.E. at the bottom of the swing in theory? In reality?
- 4.) Write the Law of Conservation of Energy in your own words. Does the pendulum display conservation of energy?
- 5.) Is energy always conserved? If not, try to give an example where it is not.
- 6.) Where is the bob moving the fastest?
- 7.) How could you determine the maximum speed of the pendulum bob? Do it.

Problem 2: Build a pendulum out of a bowling ball (or some large object), Have your partner stand near the pendulum and you raise it up until it touches the tip of their nose. Tell your partner that you're going to let the bob swing.

- 1.) Should your partner be worried? Explain.

Let 'er fly!

2.) Did your partner flinch? Did you?