

Pendulum Lab

Benchmarks

Students will understand and be able to...

Benchmark 1.3 Interpret and evaluate data in order to formulate a logical conclusion.

1.3.a Interpret and evaluate data/observations (e.g., data tables, bar and line graphs, diagrams, written descriptions, etc.) to formulate a logical conclusion.

1.3.b Use evidence to state if a hypothesis is supported or not supported.

1.3.c Make predictions based on experimental data.

Benchmark 1.6 Communicate results of their investigations in appropriate ways (for example: written reports, graphic displays, oral presentations)

1.6a Recognize that there are several different ways to communicate the results of investigations (e.g., it is good to keep written reports so that information is preserved over time; oral presentations given to a large group are best when accompanied by a visual presentation; data is best suited for certain types of visual displays - bar graphs, line graphs, tables, etc.), and they are each used at different times.

Benchmark 2.7 Quantities (for example: time, distance, mass, force) that characterize moving objects and their interactions within a system (for example, force, speed, velocity, potential energy, kinetic energy) can be described, measured and calculated

2.7.c Compare the relative amount of potential energy (stored energy) and kinetic energy (energy of motion) of a moving object at different points along its path (for example, a moving roller coaster has the most potential energy at the top of a hill and the most kinetic energy at the bottom of the hill).

Benchmark 2.8 There are different forms of energy and those forms of energy can be transferred and stored (for example: kinetic, potential) but total energy is conserved

2.8 b Explain that energy can be transferred (moved) from one object to another and transformed (changed) from one form to another.

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2.8.c Identify the energy transformations that occur in a specific system.

2.8 d Apply the law of conservation of energy to describe what happens when energy is transferred and/or transformed.

Learning Goals:

Students will be able to:

1. Students will understand the continual transfer of kinetic to potential energy.
2. Student will understand the relationships of mass, length, and angle of period.
3. Students will understand the acquisition and recording of data.
4. Students will understand different measurement criteria (mass, length, arc time)

Skills:

- Collecting and recording a variety of data
- Measuring mass, length, arc, time
- Determining dependent and independent variables
- Construction and interpreting of line graphs

Extensions

- Foucault pendulum and Earth's rotation
- Pendula, clocks and longitude.
- Design experiments to describe how variables (*length, mass, angle and gravity field*) affect the motion of a pendulum.
- Use a photogate timer to determine quantitatively how the period of a pendulum depends on the variables (*length, mass, angle and gravity field*).