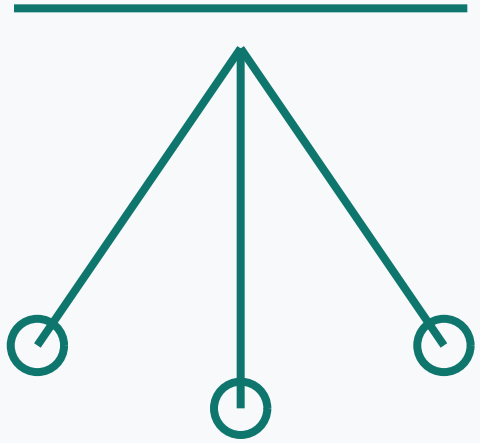
Follow one complete swing

Explain how energy changes during a swing.

Estimate a period from the pendulum length.

State the assumptions behind your answer.



Predict the period

T = 2 pi sqrt(L / g)

T: one complete period, in seconds

L: pivot to bob centre of mass, in metres

For this exercise, g = 9.81 m/s^2

Compare two lengths

1.00 m: approximately 2.01 seconds

4.00 m: approximately 4.01 seconds

Four times the length gives twice the period.

Check the energy account

Turning point: speed is zero.

Bottom: speed and kinetic energy are greatest.

Ideal model: mechanical energy is conserved.

Real swing: friction and air resistance dissipate energy.

Practise and check the model limits

Explain the energy change on the way down.

Estimate the period for L = 1.00 m.

Does doubling length double the period? Explain.

What is missing for an accurate large-angle calculation?

Sources and reuse

Fictional teaching material by Vyxora Editorial.

The spoken condition at 02:05 completes the short formula slide:

use an ideal, small-angle pendulum model.

No audio recording was used to create the sample transcript.

CC BY 4.0. Retain attribution and state any changes.

https://creativecommons.org/licenses/by/4.0/

https://vyxora.app/blog/study-guide-from-lecture-recordings-and-slides