

Mr. Taylor

Pre-Calculus

The period of a pendulum released at a small initial angle is given by the following formula:

$$T(l) = 2\pi \sqrt{\frac{l}{g}}$$

Where the period T is expressed as a function of the length of the pendulum l , which is measured in meters. The period also depends on gravity g , which on Earth is roughly $9.78 \frac{m}{s^2}$

How does the period change if the length of the pendulum is doubled?

How about when the gravity is twice that of Earths?

What if the mass of the pendulum is doubled?

Using the function given above, determine the period of a pendulum with a length of 0.60 meters. Test your answer with the pendulum provided!

Gravity on the moon is around $1.62 \frac{m}{s^2}$. If you brought the same pendulum to the moon, what would its period be?

The famous clock tower “Big Ben” in London has a pendulum with a length around 4.00 meters. What is the period of the pendulum?

The frequency of a pendulum is $F = \frac{1}{T}$, write the frequency as a function of length l using function compositions.

What is the frequency of a pendulum with a length of 0.40 meters on Earth? Test it!

If you wanted to build a clock using a pendulum, how could you find the correct length to best keep track of time? Find the inverse function for length as a function of period $l(T)$.

How long would the pendulum need to be to have a period of 1.00 seconds? Test out your new clock!