

Question #338

A simple pendulum about one meter long is seen in the photograph below. Click your mouse on the photo to see it swing. The counter seen in the video counts frames; the period of the pendulum is about 60.2 frames, which is about 2.01 seconds.



The equation most often used for the period of a pendulum in terms of its length L is:

$$T = 2\pi\sqrt{\frac{L}{g}}$$

where $g = 9.801 \text{ m/s}^2$ is the acceleration of gravity. Note that this equation is angle-independent; it makes no mention of the angle at which the pendulum is swinging.

You probably noticed that the pendulum was swung at a relatively small angle, a few degrees of arc, in the video above. Now suppose that we release the pendulum from a rather larger angle, around 50° , as seen in the photograph below.



The question this week involves how, if at all, the period of the pendulum might change when its angle increases. When the pendulum swings at a large angle, compared with its period at a small angle, seen in the video above, the period of the large angle pendulum:

- (a) will be larger.
- (b) will be smaller.
- (c) will be the same.

Click here for [Answer #338](#) after March 2, 2009.

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For questions and comments regarding the *Question of the Week* contact [Dr. Richard E. Berg](#) by e-mail or using phone number or regular mail address given on the [Lecture-Demonstration Home Page](#).