Answer on Question #47647 – Physics – Other

Question.

If the period of a pendulum 83.0 cm long is 1.81 s, what is the value of g at the location of the pendulum?

Given:

$L = 83\ cm = 0.83\ m$

$t = 1.81\ s$

Find:

$g = ?$

Solution.

By definition the period of a pendulum can be approximated by the following formula:

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

Therefore,

$$g = \frac{4\pi^2 L}{T^2}$$

Calculate:

$$g = \frac{4\pi^2 \cdot 0.83}{1.81^2} \approx 10\ \frac{m}{s^2}$$

Answer.

$g = \frac{4\pi^2 L}{T^2} = 10\ \frac{m}{s^2}$