



Determination of the acceleration due to gravity using a mathematical pendulum.

Purpose of work:

Calculate the acceleration of gravity using a pendulum.

Equipment:

000 - tripod;
096 - a ball with an eyelet;
091 - stopwatch;

Theoretical part:

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

From the formula for the period of a mathematical pendulum, we find the acceleration of gravity:

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

To do this, it is necessary to measure the period of oscillation and the length of the suspension of the pendulum.

Work progress

1. According to the picture on the board with, select the installation for the experiment.
2. Start the simulation.
3. Set the pendulum in motion.
4. Measure the period of oscillation (T) and the length of the thread pendulum (l). Enter the result into the table.

5. Repeat the time measurement 4 times, changing the length of the thread. Enter the result in the table.

6. Write a formula to calculate g.

$$g = 4\pi^2 l / T^2$$

7. Table:

No.	l (m)	T (s)	g m / s ²
1			
2			
3			

8. Conclusion:

A. Learned to measure the acceleration of gravity using a mathematical pendulum. The results agree with its actual value of 9.81 m / s².

B. Learned to measure the acceleration of gravity using a mathematical pendulum, it depends on the mass of the pendulum.

C. Learned to measure the acceleration of gravity using a mathematical pendulum, it does not depend on the period of its oscillations, but depends only on the length of the thread.