

The Sun on the Floor

Physics experiments that can be performed at home

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Earth's g - Pendulum

Through the simplest experiment one can determine the most important constant that has unquestionable impact on our existence and our everyday life. This constant is called acceleration due to gravity and a letter g has been reserved for it.

Finding the value of acceleration due to gravity by using a simple pendulum is an interesting and valid experiment - a "must" for every student - but not necessary for the school laboratory. It works everywhere if only the following rules are observed:

- The longer the pendulum the better. We suggest 0.3 - 1.5 m;
- A thin fishing line is better than string or thread;
- The pendulum bob should be small and heavy - a bolt, a ball bearing, a plasticine sphere. a 100 g weight;
- The pendulum should swing freely with a small amplitude.

Record, in seconds, the time taken for 10 to 20 full swings. Do this three to four times. Record the average time of one swing called the period T , and repeat the experiment for different lengths L of the pendulum. Plot a L -versus- T^2 graph. The slope of the best fit line multiplied by $4\pi^2$ gives the value of g in m/s^2 (See Fig. Ea and Eb).

