ConcepTest 14.11 Damped Pendulum

After a pendulum starts swinging, its amplitude gradually decreases with time because of friction.

What happens to the period of the pendulum during this time ?

1) **period increases**
2) **period does not change**
3) **period decreases**

ConcepTest 14.11 Damped Pendulum

After a pendulum starts swinging, its amplitude gradually decreases with time because of friction.

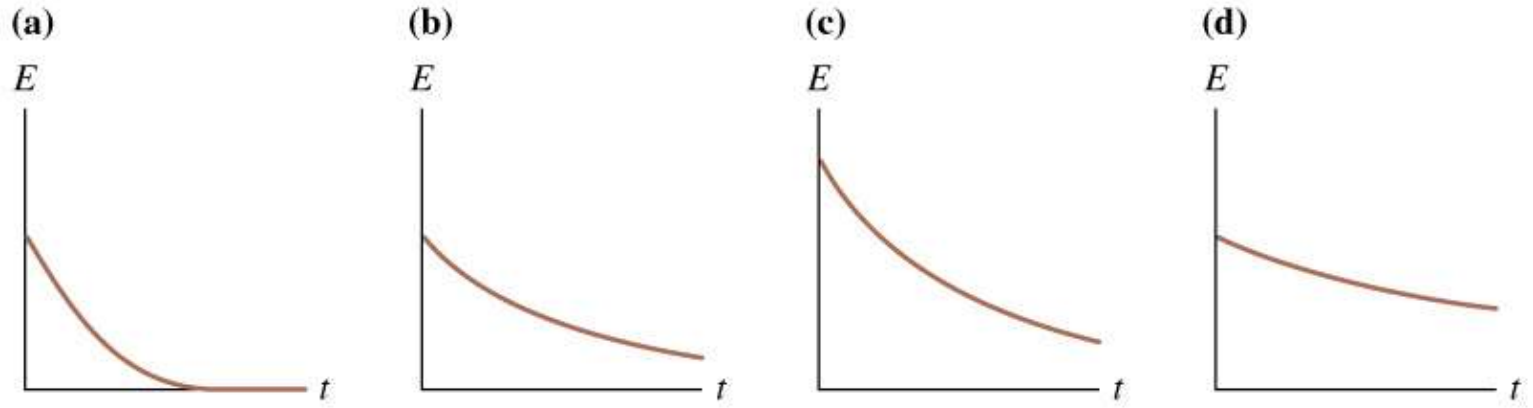
What happens to the period of the pendulum during this time ?

1) period increases
2) period does not change
3) period decreases

The period of a pendulum does not depend on its amplitude, but only on its length and the acceleration due to gravity.

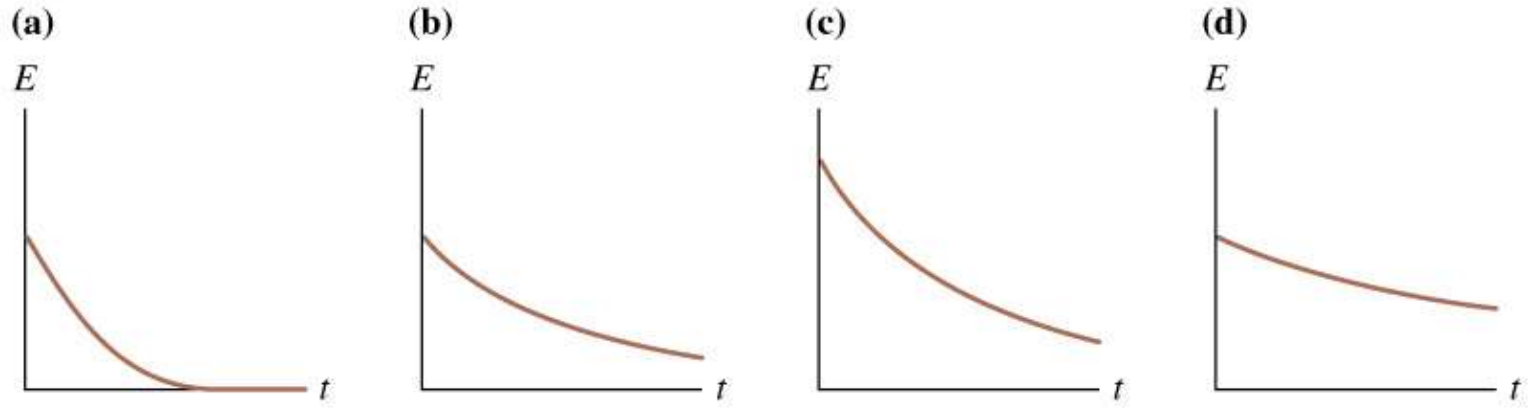
$$T = 2\pi\sqrt{\frac{L}{g}}$$

Follow-up: What is happening to the energy of the pendulum?



Rank in order, from largest to smallest, the time constants $\tau_a - \tau_d$ of the decays shown in the figure.

1. $\tau_c > \tau_b = \tau_d > \tau_a$
2. $\tau_a > \tau_b > \tau_c > \tau_d$
3. $\tau_a > \tau_b = \tau_d > \tau_c$
4. $\tau_d > \tau_b = \tau_c > \tau_a$
5. $\tau_d > \tau_b > \tau_c > \tau_a$



Rank in order, from largest to smallest, the time constants $\tau_a - \tau_d$ of the decays shown in the figure.

1. $\tau_c > \tau_b = \tau_d > \tau_a$
2. $\tau_a > \tau_b > \tau_c > \tau_d$
3. $\tau_a > \tau_b = \tau_d > \tau_c$
4. **$\tau_d > \tau_b = \tau_c > \tau_a$** ✔
5. $\tau_d > \tau_b > \tau_c > \tau_a$