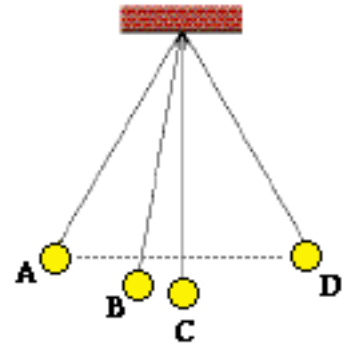


Pendulums.

- A pendulum is observed to complete 32 full cycles in 56 seconds.
 - Calculate the period.
 - Calculate the frequency.
 - Calculate the length.
- A pair of trapeze performers at the circus is swinging from ropes attached to a large elevated platform. Suppose that the performers can be treated as a simple pendulum with a length of 16 m. Determine the period for one complete back and forth cycle.
- Find the length of a pendulum that has a period of 2.0 s.
- Find the length of a pendulum that has a frequency of 0.80 Hz.
- The acceleration due to gravity on the moon is 1.6m/s^2 . How long of a pendulum would be required to have a period of 1.0 s?
- The bob of a pendulum has a mass of 0.25 kg. If this pendulum is 1.0 m long, what is its frequency?
- In the pendulum of problem #6, the bob is replaced with a 0.50 kg bob. If the length is unchanged what is the frequency?
- What is the period of a pendulum on a 4.0 m long string with a 6.0 kg mass?
- Which would have the highest *frequency* of vibration? Why? Prove mathematically.
Pendulum A: A 200-g mass attached to a 1.0-m length string
Pendulum B: A 400-g mass attached to a 0.5-m length string
- Anna wishes to make a simple pendulum that serves as a timing device. She plans to make it such that its period is 1.00 second on Earth. What length must the pendulum have?
- Anna takes her pendulum to planet B that has twice the mass of Earth with the same radius as Earth. What is the period of her pendulum on planet B?
- Next, Anna travels to planet C that has half the mass of Earth with a radius twice that of Earth. What is the period on planet C?
- Finally, Anna takes her pendulum to planet D. On planet D, Anna's pendulum has a period of 1.4 seconds. Calculate the acceleration due to gravity of planet D.
- Somewhere on a distant planet, a simple pendulum is pulled away from the equilibrium point and released. The pendulum comes back to the point of release exactly 2.4 seconds after the release. If the length of the pendulum is 1.3 m, what is the acceleration due to gravity on the planet?
- A pendulum has a period of 3.6s, what is the frequency?
- A spring vibrates 32 times in 56s. Find its period and frequency
- Find the length of a pendulum on earth that has a period of 2.0s.
- Find the length of a pendulum on earth that has a frequency of 0.80Hz.
- Determine the acceleration due to gravity at a location where a pendulum 0.75m long has a frequency of 0.57Hz.
- The acceleration due to gravity on the moon is 1.6m/s^2 . How long of a pendulum would be required to have a period of 1.0s?



21. The bob of a pendulum has a mass of 0.25kg. If this pendulum is 1.0m long, what is its frequency?
22. In the pendulum of problem #21, the bob is replaced with a 0.50kg bob. IF the length is unchanged what is the frequency?
23. Elwin, the bungee clown, swings back and forth like a simple pendulum at the end of a bungee cord. If a student determines the time of one complete swing is 6.9s, how long is the bungee cord when Elwin is swinging from it?