

D. Determine the period of:

- 1) a pendulum swinging back and forth exactly 40 times in 30 s
- 2) a light wave with a frequency of 5.5×10^{14} Hz
- 3) the moon, which travels around the Earth six times in 163.8 d
- 4) forty waves striking the Seawall in Stanley Park in 2.0 min
- 5) the pulse from a human heartbeat which is heard 35 times in 12 s

E. Determine the period for these pendulums:

- 1) a pendulum having a length of 0.65 m
- 2) a pendulum suspended from the CN Tower by a light string 495 m long
- 3) a 75 cm-pendulum on the moon, where the acceleration due to gravity is $1.6 \frac{m}{s^2}$

F. On a particular planet, the period of a 0.50 m pendulum is 1.8 s. What is the acceleration due to gravity on this planet?

G. Find the length of a pendulum which has a period of 2.5 s.

H. A pendulum makes 20 complete oscillations in 40 s. Find the pendulum's length.

I. A grandfather clock has a pendulum exactly 1.00 m long and kept perfect time. A spoiled brat broke the pendulum. When it was repaired, the pendulum was 98.0 cm.

- 1) What was the original period?
- 2) What is the new period?
- 3) Did the repaired clock lose time or gain time?
- 4) What would be the accumulated error after one day of operation?

J. The wavelength of a water wave in a ripple tank is 0.085 m. If the wave frequency is 3.5 Hz, what is its speed?

K. The distance between successive crests in a series of water waves is 5.0 m and the crests travel 10.0 m in 5.5 s. What is the frequency of the waves?

L. It is 24 m from trough to trough in a system of water waves. If 10 waves pass a given point each minute, determine the speed of the waves.

M. The period of a sound wave from a piano is 1.25×10^{-3} s. If the speed of the wave in air is 340 m/s , what is the wavelength?

N. A source with a frequency of 40 Hz produces water waves that have a wavelength of 1.5 cm. What is the speed of the wave?

O. A wave in a rope travels at a speed of 4.5 m/s . If the wavelength is 2.6 m, what is the period of the wave?

P. A given crest of a water wave requires 4.8 s to travel between two points on a fishing wharf 17 m apart. It is noted in a series of waves that 20 crests pass the first point in 15 s. What is the wavelength of the waves?

Q. A local pop radio station broadcasts with a frequency of 95.3 MHz. If these radio waves travel with a speed of $3.00 \times 10^8 \text{ m/s}$, what is their wavelength?