Answer on Question#41761, Physics, Other

A worker in an office 1350 m from Big Ben sets his watch to 1o clock when he hears the clock chime through an open window. An hour later, at 2 o clock, he checks his watch using the chimes of Big Ben heard from the radio and finds that his watch is 4 seconds slow. The watch is working correctly. Explain why he had set his watch 4 seconds slow at 1 o clock.

Solution

Such as the speed of sound in the air is $v \approx 330\frac{m}{s}$, in the worker first case has accepted a signal with delay. The delay of sound is

$$\Delta t = \frac{s}{v} = \frac{1350\ m}{330\frac{m}{s}} = 4\ s.$$