

Velocity Review 2

Physics Chpt. 3 rev 2

$$v_{\text{light}} = 3.0 \times 10^8 \text{ m/s}$$

$$v_{\text{sound}} = 340. \text{ m/s}$$

$$\text{accel of gravity} = -9.8 \text{ m/s}^2$$

1. How far away is the sun if it takes light 8.33 minutes to reach the earth once it leaves the sun?
2. How far does a rock fall if it was dropped out a window and lands 1.5 s later?
3. Tommie accelerates from rest to 18 km/hr in 4.4 s. a) What is his final speed in m/s?

b) What is his acceleration?...

c) How far did he go?
4. How far away did lightning strike if you see the flash and hear the thunder 7.8 s later?
5. How far are you away from a canyon if you yell "hello" and hear your echo 6.4 s later?... (remember the sound goes to the canyon and reflects back to you)
6. Sound travels at 1500 m/s in water. How far away is a little boy if you see him bang two rocks together under water and you hear it 1.5 s later (you're under water too)?
7. You see lightning strike a tree 8.80×10^2 m away and hear the thunder 1.40 s later. What do you calculate the speed of sound to be?.....

a) What is the absolute and relative error of your measurement for the speed of sound if the accepted value is 3.40×10^2 m/s?

b) What is the operational uncertainty and percentage of uncertainty?