

Chapter 14 Problem 32 †

Given

$$d = 100 \text{ m}$$

$$v = 343 \text{ m/s}$$

Solution

Find the error in timing if going by the sound of the starter's gun.

The kinematic equation with no acceleration becomes

$$d = vt$$

Solving for t gives

$$t = \frac{d}{v} = \frac{(100 \text{ m})}{(343 \text{ m/s})} = 0.292 \text{ s}$$

The runners would have been moving for 0.292 s before the timer would start if he were at the finish line.

†Problem from Essential University Physics, Wolfson