Chapter 14   Problem 32 [†]

Given
$d = 100 \ m$
$v = 343 \ m/s$

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

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

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