Answer on Question #65179-Physics-Other

If the value of time(t) t/10^-3=174±2 and distance (d) d=0.2m what is the value of absolute uncertainty in v^2?

Solution

Relative uncertainty in v^2 is

$$2\left(\frac{\Delta d}{d}\right) + 2\left(\frac{\Delta t}{t}\right) = 2\left(\frac{0}{0.2}\right) + 2\left(\frac{2}{174}\right) = 0.023$$

Absolute uncertainty in v^2 is

$$0.023\left(\frac{0.2}{174 \cdot 10^{-3}}\right)^2 = 0.03\frac{m^2}{s^2}.$$

Answer: $0.03\frac{m^2}{s^2}$.