A proton is in a uniform electric field of $4.175 \times 10^{-8}$ N/C. If the proton starts from rest, how fast will it be going after it has traveled a distance of 0.5 m? (proton charge is $1.6 \times 10^{-19}$ C and mass $1.67 \times 10^{-27}$ kg).

\[
F = ma = qE
\]

\[
a = \frac{qE}{m} = \frac{(1.6 \times 10^{-19}) (4.175 \times 10^{-8})}{1.67 \times 10^{-27}}
\]

\[
= 4
\]

\[
\frac{V_f^2}{V_i^2} = 4 \Rightarrow V_f = 2 m/s
\]