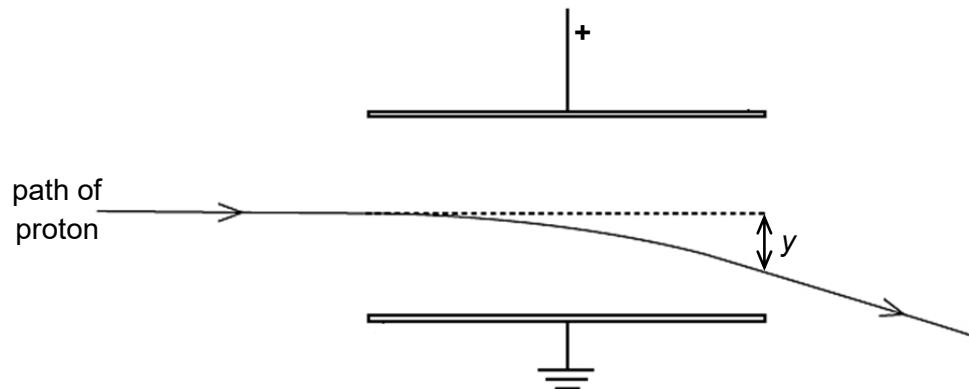


- 22** A proton with kinetic energy K is directed horizontally between two charged horizontal plates and exits with a vertical displacement y .



An alpha particle (i.e. a ${}^4_2\text{He}$ nucleus) with kinetic energy $4K$ is now directed horizontally between the plates.

What is the alpha particle's vertical displacement as it exits the plates?
(Ignore the effects of gravity.)

A $\frac{1}{4}y$

B $\frac{1}{2}y$

C y

D $2y$