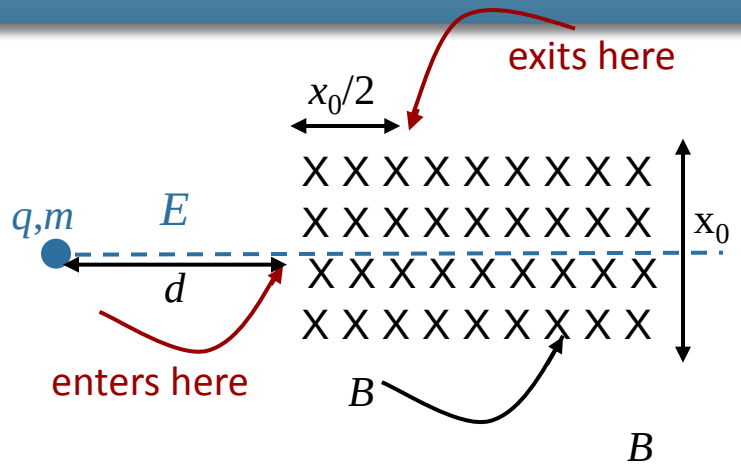
Calculation

A particle of charge q and mass m is accelerated from rest by an electric field E through a distance d and enters and exits a region containing a constant magnetic field B at the points shown. Assume q,m,E,d, and x_0 are known.

What is B?



- What is the change in the particle's potential energy after travelling distance d?

$\Delta U = -qEd$	$\Delta U = -Ed$	$\Delta U = 0$
(A)	(B)	(C)

- Why??
  - How do you calculate change in the electric potential given an electric field? → $\Delta V = -\int \vec{E} \cdot d\vec{\ell} = -Ed$
  - What is the relation between the electric potential amd the potential energy? → $\Delta U = q\Delta V$