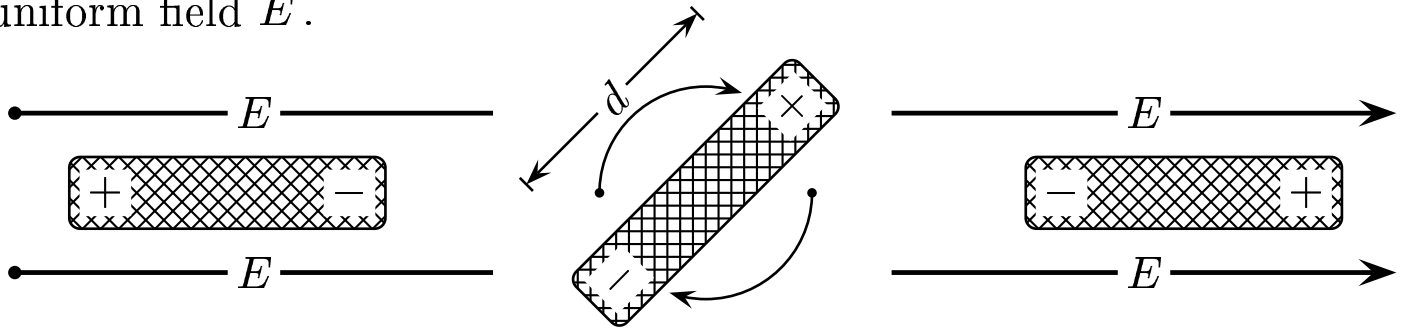


A dipole with charge $+q$ and $-q$ separated by a distance d is placed in a uniform field \vec{E} .



Determine the net force F_{net} on the dipole, and the potential energy U released in flipping the dipole from the left-hand figure to the right-hand figure.

- A) $F = 0$ and $|\Delta U| = q E d$
 B) $F = 0$ and $|\Delta U| = 2 q E d$
 C) $F = 2 q E$ and $|\Delta U| = 2 q E d$
 D) $F = 2 q E$ and $|\Delta U| = 4 q E d$

Electric forces on the two charges asserted by the electric field are equal in magnitude and opposite in direction; *i.e.*, $F = 0$.

For the $+q$ charge the potential energy released is $\Delta U = q E d$. The $-q$ charge displacement releases the same potential energy; *i.e.*, for both charges $|\Delta U| = 2 q E d$.

Answer **B**.