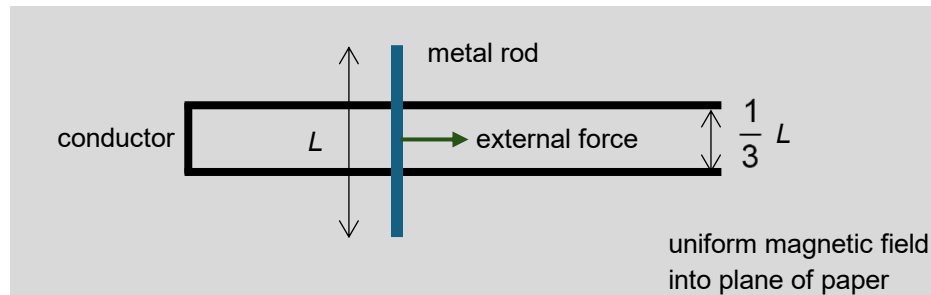


- 25 A metal rod of length L and resistance per unit length r is placed on the parallel section of a smooth conductor of negligible resistance. A uniform magnetic field B is directed perpendicularly into the paper.



The two parallel sections are separated by $\frac{1}{3}L$. An external force causes the metal rod to slide at constant speed v .

Which expression gives the magnitude of the external force?

A $\frac{3B^2Lv}{r}$

B $\frac{B^2Lv}{r}$

C $\frac{B^2Lv}{3r}$

D $\frac{B^2Lv}{9r}$