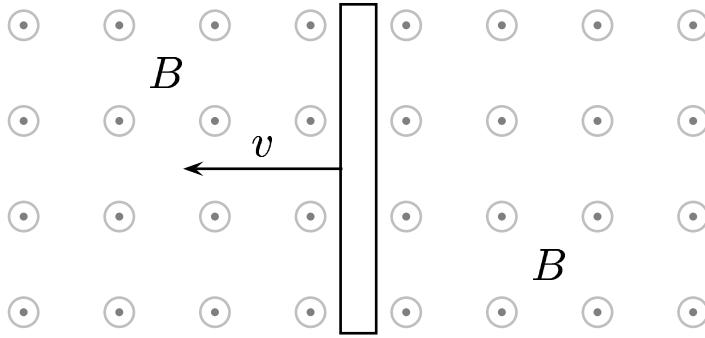


Given: A copper bar has a constant velocity in the plane of the paper and perpendicular to a magnetic field pointed out of the plane of the paper.



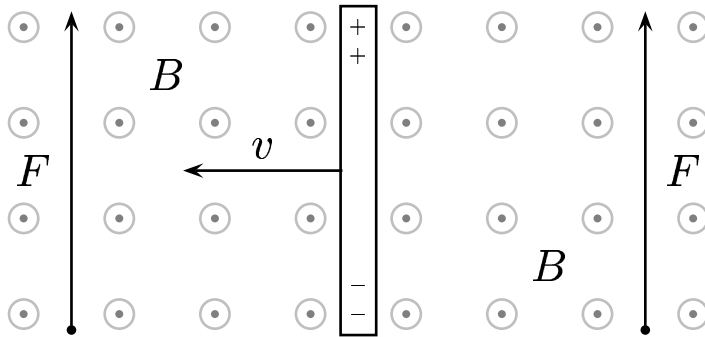
If the bar is moving from right to left, how are charges distributed on the bar?

- A) The top will be negative and the bottom will be positive
- B) Both the top and the bottom will be negative
- C) Both the top and the bottom will be positive
- D) The top will be positive and the bottom will be negative

Positive charges will move in the direction of the magnetic force, while negative charges move in the opposite direction.

The right-hand rule with $\vec{F} = q\vec{v} \times \vec{B}$, produces a force on positive charges such that the positive charges in the conductor experience upward magnetic forces while the negative charges in the conductor experience downward magnetic forces leaving the charge separation show in the figure below.

The top will be positive and the bottom will be negative.



Answer **D**.

29.01-03 Induced Charge Directions 2004-3-24