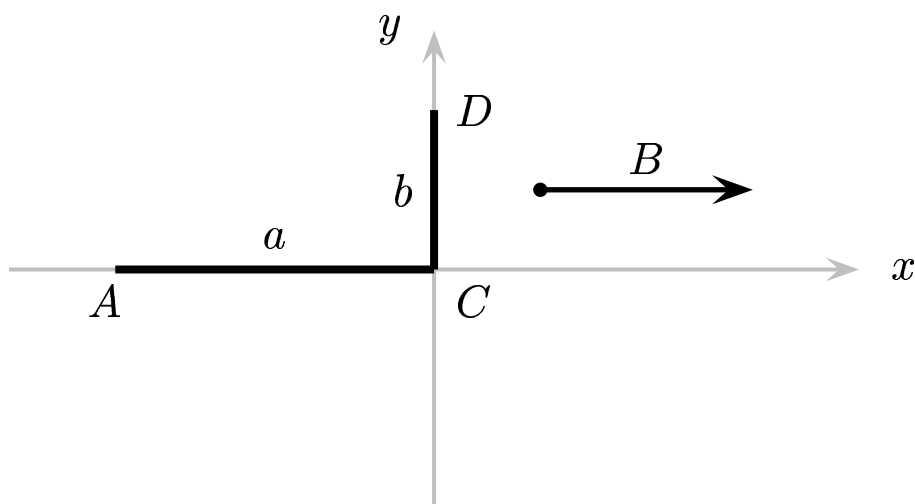


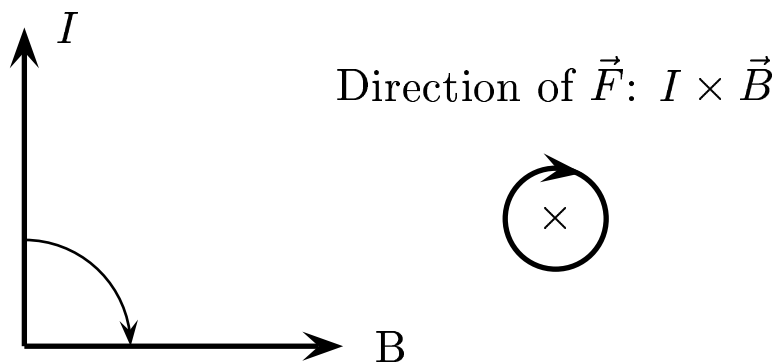
A given current flows from A to C and then to D in wire segment: $AC=a$, $CD=b$. \vec{B} is constant and parallel to positive x -axis.



Determine the resultant force vector \vec{F} , asserted by \vec{B} on the wire segment.

- A) $\|\vec{F}\| = I b B$ and the direction of \vec{F} is \otimes .
 B) $\|\vec{F}\| = I (a + b) B$ and the direction of \vec{F} is \odot .
 C) $\|\vec{F}\| = I b B$ and the direction of \vec{F} is \odot .
 D) $\|\vec{F}\| = I (a + b) B$ and the direction of \vec{F} is \otimes .

Since the current in the AC segment is parallel to B , the magnetic force due to the segment AC is, $F = I a B \sin 0^\circ$. The current in the CD segment is perpendicular to the magnetic force, so $F = I b B \sin 90^\circ = I b B$. Applying right-hand-rule of cross-product, the direction of \vec{F} is \otimes . See the sketch.



Answer A.