Question 1

A loop is placed in a region of uniform magnetic field as illustrated. The left edge of the loop can slide, maintaining contact with the rest of the loop.



At the instant depicted in the illustration the left edge is dragged (by hand) to the right. Which of the following is true while the sliding edge is in the field?

- 1. Positive charge is forced to the top of the sliding edge, negative to the bottom.
- 2. Positive charge is forced to the bottom of the sliding edge, negative to the top.
- 3. Positive charge is forced to the left of the sliding edge, negative to the right.
- 4. Positive charge is forced to the right of the sliding edge, negative to the left.

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Question 2

Several loops are placed in a uniform magnetic field (restricted to shaded region) as illustrated.



Which of the following represents the rank of the fluxes through the loop?

1.
$$\Phi_{\mathsf{A}} = \Phi_{\mathsf{B}} = \Phi_{\mathsf{C}}$$

- 2. $\Phi_A < \Phi_B < \Phi_C$
- 3. $\Phi_{A} < \Phi_{C} < \Phi_{B}$
- 4. $\Phi_{C} < \Phi_{A} < \Phi_{B}$
- 5. $\Phi_{C} = \Phi_{A} < \Phi_{B}$

Question 3

A magnetic field is as illustrated. A square coil is situated so that only one side is visible from this perspective.



Which of the following is the correct expression for the flux through the loop?

- 1. $\Phi = BA$
- 2. $\Phi = BA \cos 10^{\circ}$
- 3. $\Phi = BA\cos 20^{\circ}$
- 4. $\Phi = BA \cos 110^{\circ}$
- 5. $\Phi = BA\cos 120^{\circ}$