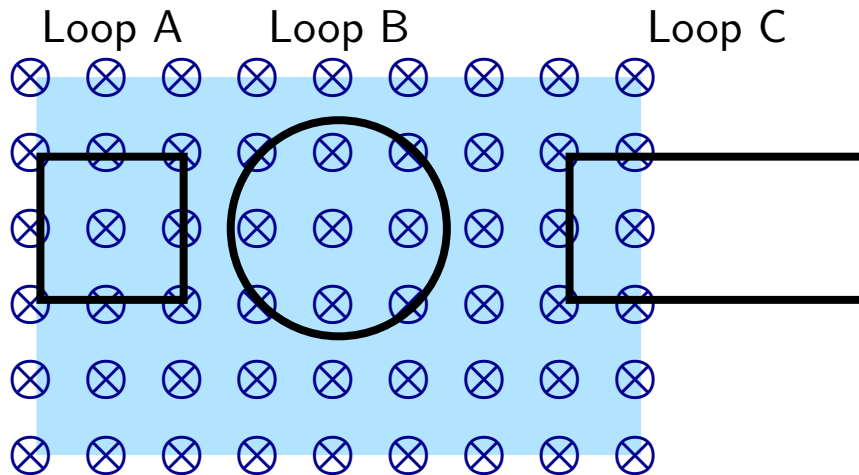


Question 1

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

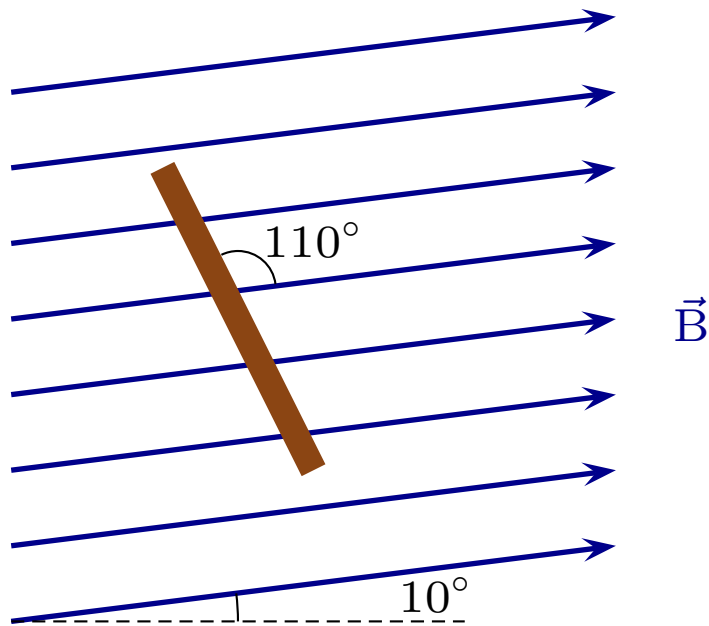


Which of the following represents the rank of the fluxes through the loop?

1. $\Phi_A = \Phi_B = \Phi_C$
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 2

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. $\Phi = BA \cos 120^\circ$

Warm Up Question 1

A magnet is aligned along the axis of a circular loop. The magnet is pushed toward the loop and then pulled back away from the loop. When does this produce a current in the loop?

1. Never
2. Only when it approaches the loop
3. Only when it moves away from the loop.
4. Both when it approaches and moves away from the loop.

Explain your answer.

1. Option 2. This is the only time when the flux changes.
2. Option 4. Flux changes during these times.

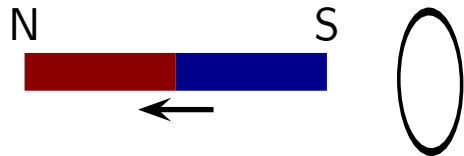
Warm Up Question 2

A lab technician, who works with large magnets wears a metal bracelet, which makes a complete loop. The technician works with an electromagnet (a solenoid through which current can pass). The magnetic field provided by the electromagnet, initially zero, increases for ten seconds, after which it has constant large value. The magnetic field is perpendicular to the bracelet. Describe whether there will be a current in the bracelet and, if so, whether it will be largest during or after the initial ten seconds.

1. No. No change in flux.
2. Yes. Largest during initial ten seconds. Levels off after that.
3. Yes. Largest during initial ten seconds. No current after that.
4. Yes. Largest after the initial ten seconds.

Question 3

A bar magnet lies along the axis of a circular loop of wire. The magnet is pulled away from a loop in the indicated direction.



Which of the following is true as the magnet moves away from the loop?

1. The current in the loop is counterclockwise (viewed from right).
2. The current in the loop is clockwise (viewed from right).
3. There is no current in the loop.