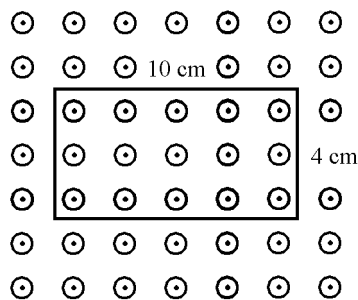1. The units J/A can be used to express

   A) electric field strength

   B) magnetic field strength

   C) magnetic flux

   D) capacitance

   E) resistance

2. A square loop of wire with sides of 0.20 m is oriented at an angle of 30° to a constant magnetic field of strength 3.0 T. The magnetic flux through this loop is most nearly

   A) 0.06 Wb

   B) 0.10 Wb
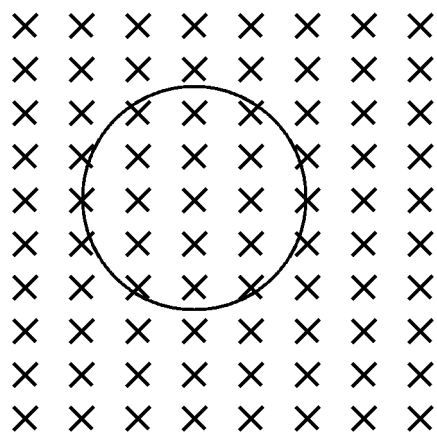
   C) 0.12 Wb

   D) 6.4 Wb

   E) 75 Wb

3.

A rectangular wire loop is at rest in a magnetic field of magnitude 4 T, directed out of the page as shown above. The loop is 10 cm by 4 cm, and the plane of the loop is perpendicular to the field. The total magnetic flux through the loop is

   A) $0 \text{ T} \cdot \text{m}^2$

   B) $8 \times 10^{-3} \text{ T} \cdot \text{m}^2$

   C) $16 \times 10^{-3} \text{ T} \cdot \text{m}^2$

   D) $8 \times 10^{-1} \text{ T} \cdot \text{m}^2$

   E) $16 \times 10^{-1} \text{ T} \cdot \text{m}^2$

4.

A circular wire loop is at rest in a uniform magnetic field of magnitude 10T that is directed into the page. The loop has a diameter of 6 cm, and the plane of the loop is perpendicular to the field, as shown above. The total magnetic flux through the loop is

A) $0 \text{ T} \cdot \text{m}^2$

B) $6\pi \times 10^{-3} \text{ T} \cdot \text{m}^2$

C) $9\pi \times 10^{-3} \text{ T} \cdot \text{m}^2$

D) $36\pi \times 10^{-3} \text{ T} \cdot \text{m}^2$

E) $36\pi^2 \times 10^{-3} \text{ T} \cdot \text{m}^2$

5. Two square loops of the same wire are shown below, one with side length a and side length $2a$. A uniform magnetic field B directed into the page is contained within the area enclosed by the square of side a.
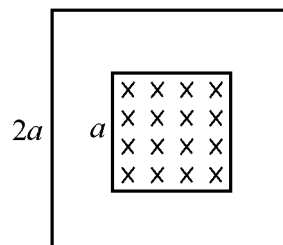
What is the ratio of the flux passing through the loop of side a to the loop of side $2a$?

A) 4:1

B) 2:1

C) 1:1

D) 1:2

E) 1:4

6. A loop of radius r is in a plane perpendicular to a magnetic field B. What is the net magnetic flux through the loop?

A) B/r

B) B/r^2

C) Br

D) $B\pi r$

E) $B\pi r^2$

7. Two wire loops are in a plane perpendicular to a magnetic field and are completely within the magnetic field. If one loop has a radius r and the other loop has a radius $3r$, what is the ratio of the flux through the loop of radius r to the flux through the loop of radius $3r$?

A) 1:9

B) 1:3

C) 1:1

D) 3:1

E) 9:1

8. A loop of wire forms a right triangle with legs of length 3 m and 4 m. The loop is placed in a magnetic field of 5 T at a 45° to the magnetic field. What is the magnetic flux through the loop?

A) 15 T•m^2

B) 21 T•m^2

C) 26 T•m^2

D) 30 T•m^2

E) 42 T•m^2

Answer Key
Ampere's Law MC Questions [Mar 28, 2011]

1.   C

2.   B

3.   C

4.   C

5.   C

6.   E

7.   A

8.   B

Name _____   Class _____   Date _____

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____