← AP Phyz, section 3/4,

Magnetism Clicker Qs (Quiz)

INSTRUCTOR
jeff burmester
GWINNETT CO PUBLIC SCHOOL DIST.GA

Current Score

QUESTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
POINTS	–/1	–/1	–/1	–/1	–/1	–/1	–/1	–/1	–/1	–/1	–/1	–/1	–/1	–/1	–/1	–/1	–/1	–/1	–/1

TOTAL SCORE

–/29	0.0%

Due Date

THU, MAR 27, 2025
11:30 AM EDT

REQUEST EXTENSION

Assignment Submission & Scoring

Assignment Submission

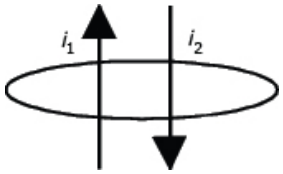
For this assignment, you submit answers by question parts. The number of submissions remaining for each question part only changes if you submit or change the answer.

Assignment Scoring

Your best submission for each question part is used for your score.

1. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.01A.**

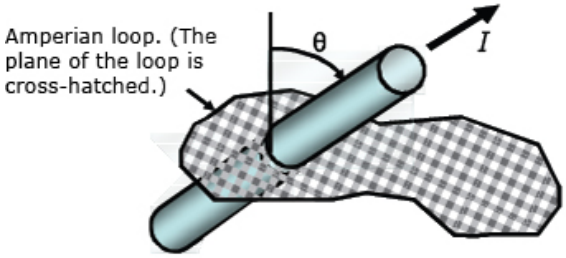
An Amperian loop is drawn around two current carrying wires, as shown below. What is the value of $\oint \vec{B} \cdot d\vec{s}$ moving counterclockwise, viewed from above, around the loop? (Note that i_1 and i_2 don't have to be the same size)



- ○ $\mu_0 i_1$
- ○ $\mu_0 i_2$
- ○ $\mu_0(i_1 - i_2)$
- ○ $\mu_0(i_1 + i_2)$
- ○ zero

2. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.01B.**

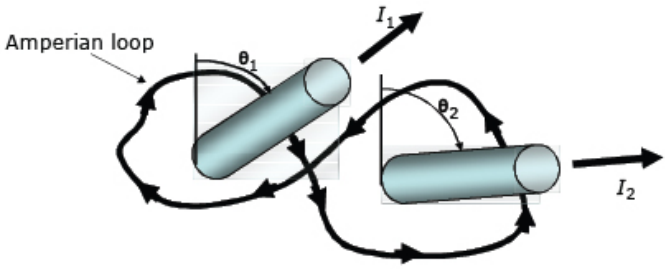
An irregularly-shaped Amperian loop is drawn around a wire carrying a current I. The wire is inclined at an angle θ to the plane of the loop. What is the value of $\oint \vec{B} \cdot d\vec{s}$ moving counterclockwise, viewed from above, around the loop?



- ○ $\mu_0 I$
- ○ $\mu_0 I \sin(\theta)$
- ○ $\mu_0 I \cos(\theta)$
- ○ $\mu_0 I \tan(\theta)$
- ○ $-\mu_0 I$
- ○ zero

3. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.01C.**

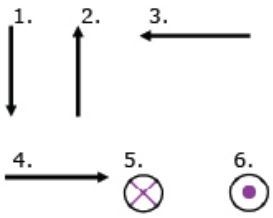
An Amperian loop is drawn around wires carrying current I_1 and I_2. The loop is irregular and folded over between the two currents, as shown by the arrows. The wires are inclined at angles θ_1 and θ_2 to the plane of the loop. What is the value of $\oint \vec{B} \cdot d\vec{s}$ moving in the direction shown around the loop?



- $\mu_0(I_2 - I_1\cos\theta_1)$
- $\mu_0(I_2\cos\theta_2 + I_1)$
- $\mu_0(I_2\cos\theta_2 + I_1\cos\theta_1)$
- $\mu_0(I_2\cos\theta_2 - I_1\cos\theta_1)$
- $\mu_0(I_2 + I_1)$
- $\mu_0(I_2 - I_1)$

4. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.02A.**

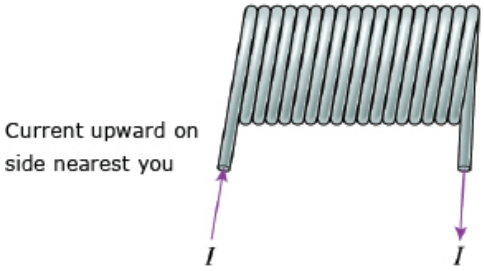
Current is flowing to the right in a wire. The magnetic field at the position P points

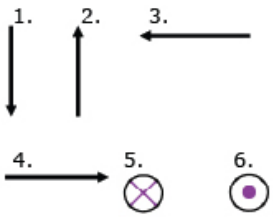


- 1
- 2
- 3
- 4
- 5
- 6

5. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.02B.**

What is the direction of the magnetic field inside the solenoid?





- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6

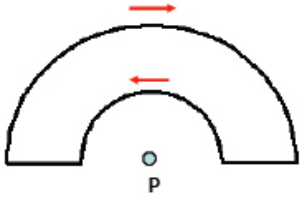
6. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.03A.**

What is the direction of the magnetic field at point P, which is exactly in the middle of two parallel wires carrying equal currents *I* in opposite directions?

- ○ into the screen
- ○ out of the screen
- ○ left
- ○ right
- ○ There is no magnetic field at point P.

7. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.03B.**

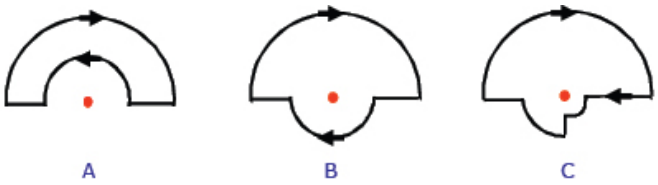
What is the direction of the magnetic field at point P, which is at the center of a semicircular loop of wire carrying a current *I* as shown?



- ○ into the screen
- ○ out of the screen
- ○ left
- ○ right
- ○ There is no magnetic field at point P.

8. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.03C.**

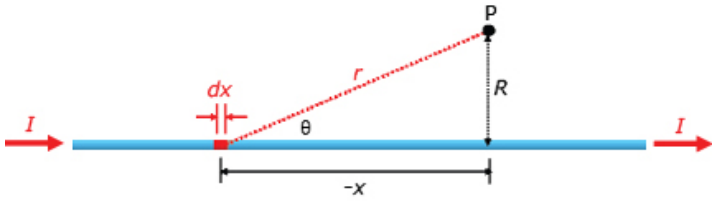
All of the current loops below carry the same current *I*. Rate them according to the strength of the magnetic field at the red dot, from largest to smallest.



- ○ A > B > C
- ○ A > C > B
- ○ B > C > A
- ○ B > A > C
- ○ C > B > A
- ○ C > A > B

9. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.04A.**

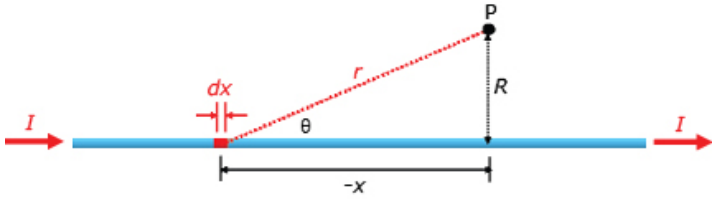
What is the **direction** of the magnetic field at point P due to the current flowing through the wire segment dx?



- ○ up
- ○ down
- ○ left
- ○ right
- ○ in
- ○ out

10. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.04B.**

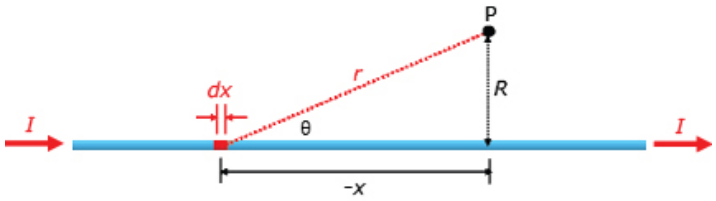
What is the **magnitude** of the magnetic field at point P due to the current flowing through the wire segment *dx*?



- ○ $dB = \left(\frac{\mu_0}{4\pi}\right)\left(\frac{Irdx}{R^2}\right)$
- ○ $dB = \left(\frac{\mu_0}{4\pi}\right)\left(\frac{IRdx}{r^3}\right)$
- ○ $dB = \left(\frac{\mu_0}{4\pi}\right)\left(\frac{I\cos(\theta)dx}{r^2}\right)$
- ○ $dB = \left(\frac{\mu_0}{4\pi}\right)\left(\frac{I\sin(\theta)dx}{R^2}\right)$
- ○ $dB = \left(\frac{\mu_0}{4\pi}\right)\left(\frac{Irdx}{R^2}\right)$

11. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.04C.**

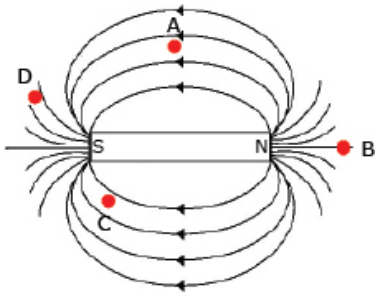
An integral can sum contributions from all of the current segments. For an infinitely long wire (length>>>R), which of the following integrals has the correct form?

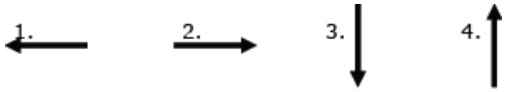


- $B = IR\left(\frac{\mu_0}{4\pi}\right)\int_{-\infty}^{+\infty}\frac{dx}{(x^2+R^2)^{3/2}}$
- $B = IR\left(\frac{\mu_0}{4\pi}\right)\int_{-\infty}^{+\infty}\frac{dx}{(x^2+R^2)}$
- $B = I\left(\frac{\mu_0}{4\pi}\right)\int_{-\infty}^{+\infty}\frac{rdx}{(x^2+R^2)^{3/2}}$
- $B = IR\left(\frac{\mu_0}{4\pi}\right)\int_{-\infty}^{+0}\frac{dx}{(x^2+R^2)^{3/2}}$

12. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.05A.**

A permanent magnet has field lines as shown below. An electron moves out of the screen toward you at point A. The direction of the magnetic force on the electron is best represented by





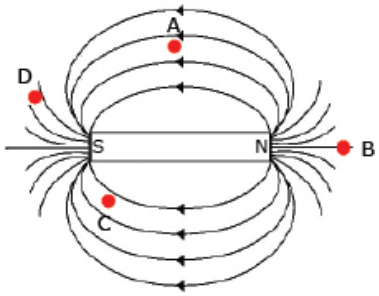
5. zero

6. none of these

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

13. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.05B.**

A permanent magnet has field lines as shown below. A proton moves to the right at point B. The direction of the magnetic force on the proton is best represented by



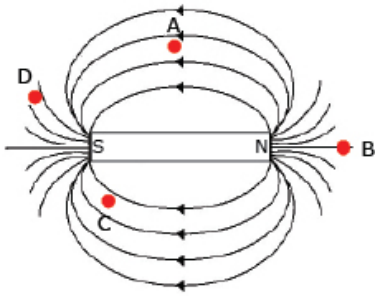
1. ← 2. → 3. ↓ 4. ↑

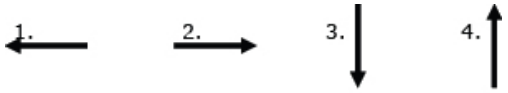
5. zero 6. none of these

- ○ 1.
- ○ 2.
- ○ 3.
- ○ 4.
- ○ 5.
- ○ 6.

14. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.05C.**

A permanent magnet has field lines as shown below. An electron moves vertically upward (on this screen) at point C. The direction of the magnetic force on the electron is best represented by





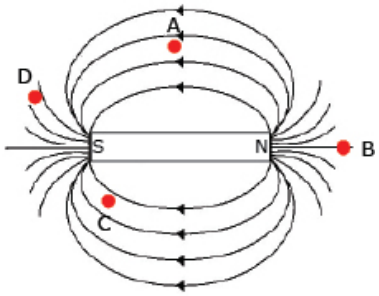
5. zero

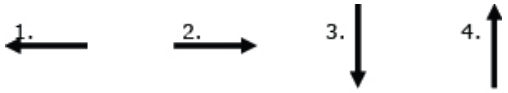
6. none of these

- ○ 1.
- ○ 2.
- ○ 3.
- ○ 4.
- ○ 5.
- ○ 6.

15. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.05D.**

A permanent magnet has field lines as shown below. A proton is at rest at point D. The direction of the magnetic force on the proton is best represented by





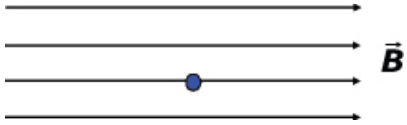
5. zero

6. none of these

- ○ 1.
- ○ 2.
- ○ 3.
- ○ 4.
- ○ 5.
- ○ 6.

16. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.06A.**

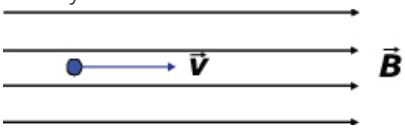
A negative charge is placed at rest in a magnetic field as shown below. What is the direction of the magnetic force on the charge?



- ○ left
- ○ right
- ○ up
- ○ down
- ○ into the page
- ○ out of the page
- ○ no force at all

17. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.06B.**

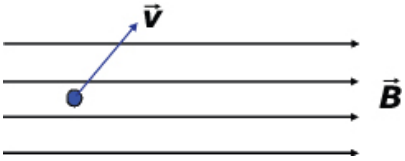
A negatively charged particle is moving horizontally to the right in a uniform magnetic field that is pointing in the same direction as the velocity. What is the direction of the magnetic force on the charge?



- ○ left
- ○ right
- ○ up
- ○ down
- ○ into the page
- ○ out of the page
- ○ no force at all

18. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.06C.**

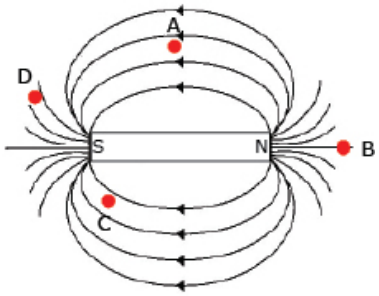
A negatively charged particle is moving upward and to the right in a uniform magnetic field that points in the horizontal direction. What is the direction of the magnetic force on the charge?



- ○ left
- ○ right
- ○ up
- ○ down
- ○ into the screen
- ○ out of the screen
- ○ no force at all

19. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.07A.**

A permanent magnet has magnetic field lines as shown below. A wire oriented perpendicular to the screen carries a current toward you at point A. The direction of the magnetic force on the wire is best represented by

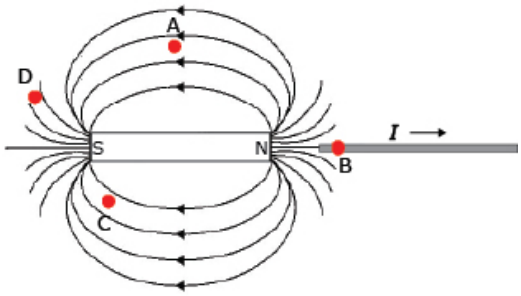


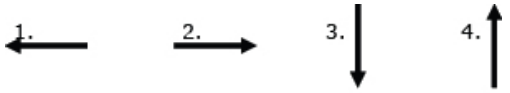
1.
2. 
3. 
4. 
5. zero
6. none of these

- ○ 1.
- ○ 2.
- ○ 3.
- ○ 4.
- ○ 5.
- ○ 6.

20. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.07B.**

A permanent magnet has magnetic field lines as shown below. A wire carries a current to the right. The direction of the magnetic force on this wire at point B is best represented by





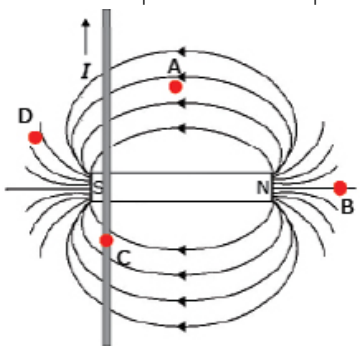
5. zero

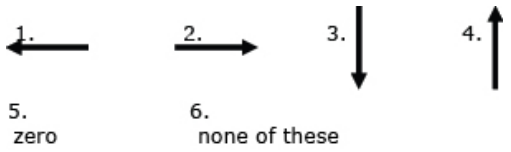
6. none of these

- ○ 1.
- ○ 2.
- ○ 3.
- ○ 4.
- ○ 5.
- ○ 6.

21. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.07C.**

A permanent magnet has magnetic field lines as shown below. A wire carries a current vertically upward. The direction of the magnetic force on this wire at point C is best represented by





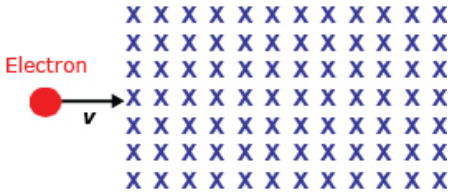
5. zero

6. none of these

- ○ 1.
- ○ 2.
- ○ 3.
- ○ 4.
- ○ 5.
- ○ 6.

22. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.08A.**

An electron enters a magnetic field directed into the screen, as shown below. It will experience



- ○ a force directed along its motion
- ○ a force directed opposite to its motion
- ○ a force directed upward on the screen
- ○ a force directed downward on the screen
- ○ no force for this direction of B field

23. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.08B.**

An airplane viewed from above flies through a small magnetic field oriented vertically downward toward the ground (into the page), as shown below. Which of the following statements is true?

- ○ The plane's front (F) becomes positively charged.
- ○ The tip of the left wing (L) becomes positively charged.
- ○ The tip of the right wing (R) becomes positively charged.
- ○ The top of the plane becomes positively charged.
- ○ None of the above, there's no charging mechanism.

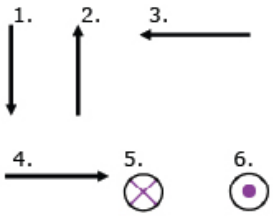
24. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.08C.**

A thin slab of Germanium is used as a Hall Effect probe. How would you orient a magnetic field to make the side facing out of the screen be at a positive voltage with respect to the opposite side facing into the screen? (In this case, the current is composed of moving electrons, not positive charges)

- ○ into the screen
- ○ out of the screen
- ○ pointing right on the screen
- ○ pointing left on the screen
- ○ downward on the screen
- ○ upward on the screen

25. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.09A.**

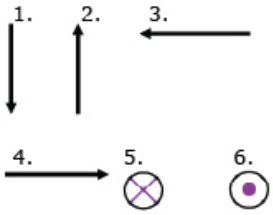
You have two parallel wires carrying currents in the same direction. What is the direction of the magnetic field at the position where I_2 is located that is created by I_1?



- ○ 1.
- ○ 2.
- ○ 3.
- ○ 4.
- ○ 5.
- ○ 6.

26. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.09B.**

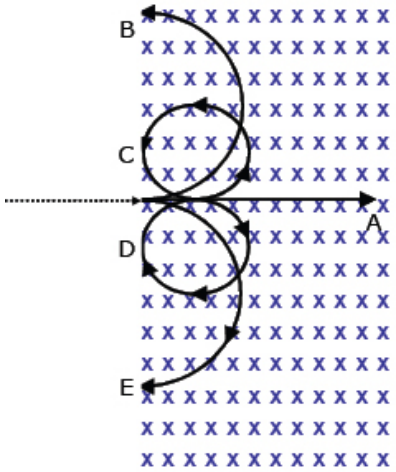
You have two parallel currents with the same direction. What is the direction of the magnetic force due to I_1 that acts on I_2?



- ○ 1.
- ○ 2.
- ○ 3.
- ○ 4.
- ○ 5.
- ○ 6.

27. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.10A.**

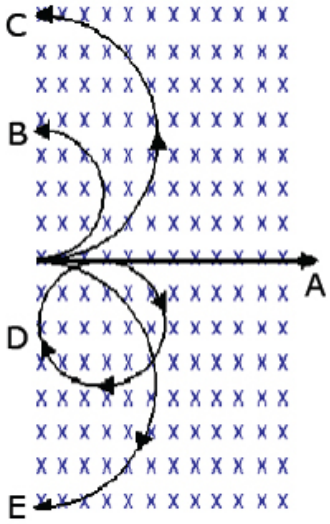
A proton enters a uniform magnetic field into the screen as shown. Which of the following could be its subsequent trajectory?



- ○ A
- ○ B
- ○ C
- ○ D
- ○ E

28. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.10B.**

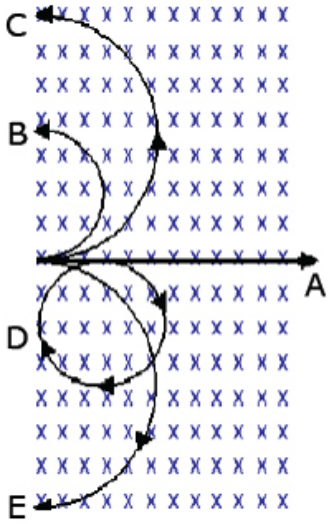
A proton enters a uniform magnetic field and follows trajectory B. A deuteron (same charge and twice the mass) enters the magnetic field in the same way and with the same velocity as the proton. Which of the following is the right trajectory for the deuteron?



- A
- B
- C
- D
- E

29. **[–/1 Points]** DETAILS MY NOTES **DINGPHYSCLICKER1 23.MC.10C.**

A proton enters a magnetic field and follows trajectory B. An alpha particle (twice the charge and 4 times the mass) enters the same magnetic field in the same way and with the same velocity as the proton. Which of the following is the right trajectory for the alpha particle?



- A
- B
- C
- D
- E