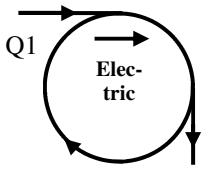
Up

A-day: Due Thurs., May 15 (Assigned Tues, May 13)
B-day: Due Fri., May 16 (Assigned Wed., May 14)

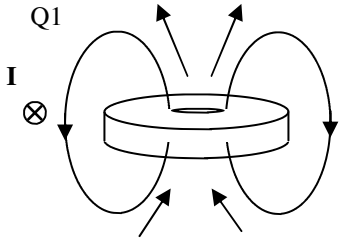
2008 Magnetism 4

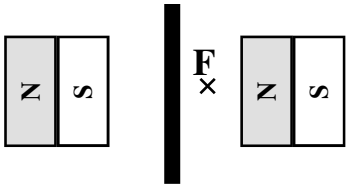
First, let us be certain you understand the directions with regard to this page. Notice the directions at the four sides of this page: up ↑, down ↓, left ←, and right →. When you see any of these symbols or words, you should be pointing to the words on the page. When you see "into the page" or "X", your fingers should be pointing at the center of the paper. "Out of the page" or a "•" should have you pointing towards your face or chest.



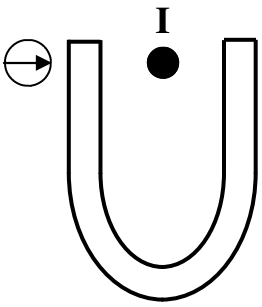
1. A. Find the north pole for the loop of electricity at the left.
   B. Is the part facing you a N or a S pole?
   C. A compass brought close will point towards the loop or away from the loop?

2. The X shows the direction current is traveling in a wire. Which direction will the wire be deflected (moved)?



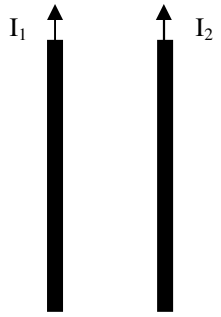


3. A wire is placed between two magnets, then the battery is turned on. The wire deflects as shown.
   A. Is the current going up or down the wire?
   B. Draw + and − on the wire.



4. A. Use the compass to label the N and S of the horseshoe magnet.
   B. The wire shows current coming out of the page. Find the direction the wire moves.

Left

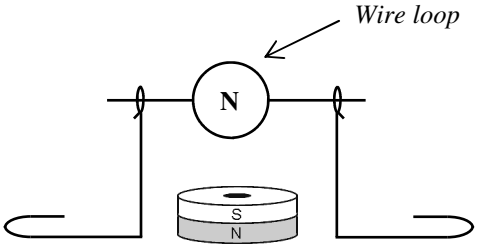


5. A. What is the direction of B in front of wire 1?

   B. What is the direction of B to the left of wire 2?

   C. What is the direction of B due to wire 1 at wire 2? (Draw it at wire 2.)
   D. Which way will wire 2 move because of wire 1's magnetic field?

Right



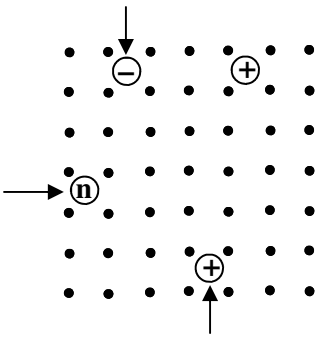
6. The wire loop is an electromagnet.
   A. In order for the N pole of the loop to face out of the page, which direction is the current flowing around the loop: CCW or CW?

   B. Will the front of the loop move toward or away from the donut magnet beneath it?

7. Imagine you are running and grab a pole with your left hand.
   A. Describe the path your body would follow.

   B. How do the direction of your velocity and the force of your arm compare? (*I'm talking angles here.)*

8. In the diagram at the right show the paths that each of the four objects will take inside the magnetic field. Arrows show velocity (direction of motion). No arrow = no motion. The "n" stands for a neutron.

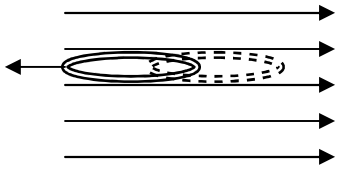


9. (From the "Magnetic Induction" notes: "Ways to Induce Current".) In order to induce a current in a loop of wire what has to happen?

10. A wire is placed between a magnet's poles. A battery is hooked up to the wire and turned on. The wire jumps to one side.
    A. In this example, what moves because of the magnetic field (the direction of F_B)?
    B. What is the moving charge (q)?
    C. What is moving the charge?

11. A wire is placed inside a magnetic field and hooked up to an ammeter. When the wire is pulled into the magnetic field the ammeter shows current is flowing.
    A. In this example, what moves because of the magnetic field (the direction of F_B)?
    B. What is the moving charge (q)?
    C. What is moving the charge?

12. Give the four ways to induce current in a wire loop.



13. In the diagram at the left the magnetic field is pointing to the right. A wire loop is moved to the left. In which direction does the induced current move in the loop?

14. Using the RGB model for color:
    A. What is the background color? ____
    B. How would you make white? ____
    C. How would you make magenta? ____
    D. How would you make Red? ____
    E. How would you make black? ____
    F. Does RGB use paints or lights?

15. Using the CMYK model for color:
    A. What is the background color? ____
    B. How would you make white? ____
    C. How would you make cyan? ____
    D. How would you make Blue? ____
    E. How would you make black? ____
    F. Does CMYK use paints or lights?

16. What is the one thing that travels faster than light?

Using notes: "Refraction"

17. Of the substances shown in the table, in which does light travel the slowest?

18. Find the speed of light in Sodium Chloride.

Material	n
Cubic zirconia	2.2
Zircon	1.923
Quartz	1.458
Sodium Chloride	1.544

19. A. Draw a convex lens.
    B. Draw a concave lens.

20. A. Is the image below real or virtual?
    B. How do you know?
    C. Label p, q, h, and h'.
    D. If the light is moved backwards, what happens to the image?