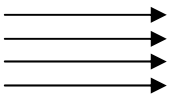
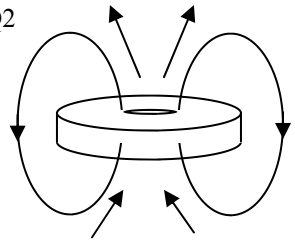
PreAP: Due Tues., Apr 25 (Assigned Mon, Apr 17)
Reg. Due Wed., Apr 26 (Assigned Mon., Apr 24)

Magnetism 3

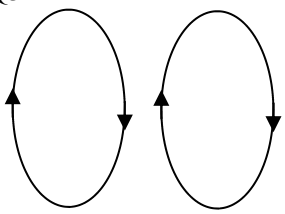
Q1



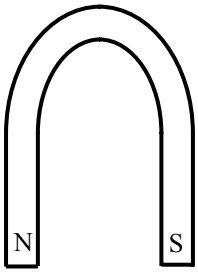
Q2



Q3



Q4



1. Figure 1 shows a magnetic field label the sides of the field as N and S.
2. Label the doughnut magnet's N and S poles.
3. A) Label the inner arrows with N and S
   B) Will the fields attract or repel?
   C) Why or why not?
4. Draw the magnetic field lines between the poles of the horseshoe magnetic.
5. Draw the magnetic field lines between the two shown magnets.
6. Give the sign conventions for the following (draw the symbols):

   A. Forward _____ C. Up _____ E. Right _____

   B. Left _____ D. Backward _____ F. Down _____

Q6

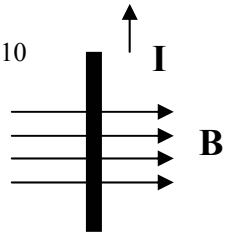
7. If you put two compasses on top of each other, what happens and why?

Q9

8. If the wire shown has a current running from left to right,
   A) draw B above and below the wire using the symbols from Q6.
   B) which direction is the magnetic field in front of the wire?

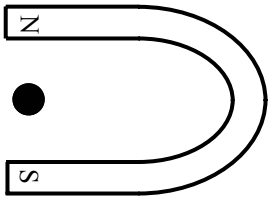
9. The thick black line is a wire carrying current up. The arrows show the direction of the magnetic field. Which direction is the force on the wire?

Q10



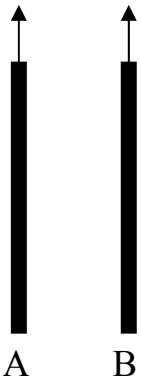
10. A) Which direction are the magnetic field lines going for the horseshoe magnet? (Drawing them might help.)
    B) If the black dot shows a current carrying wire with the current going down into the page, which direction will the wire feel a force?

Q11



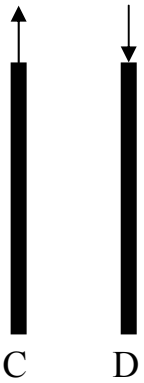
11. The two black lines are current carrying wires. The currents are in the same direction.
    A) Which direction is B going on the right side of wire A (into or out of the page)?
    B) Draw which direction B is going on the right side of wire A.
    C) Which direction will the force on wire B be applied?

Q12



12. Following the same logic as in Q12, which direction will the force from wire D feel from wire C?

Q13



Magnetism 3

13. A current carrying wire is coming out of the page (toward you), which way is B, clockwise or counterclockwise?
14. A current carrying wire is looped clockwise in the plane of the paper. Is B up or down?

15. The force the charge feels is forward when B is down. Which way is the charge moving?

16. A moving charge in a uniform magnetic field travels how?

17. A 12 N force is felt by a 2 μC charge going 3×10^4 m/s. How big is the magnetic field?

18. A 20 loop, 0.35 m^2 solenoid oriented at an angle of 20 degrees feels a magnetic field change from 10 T to 2.2 T in 3 seconds. How much emf is felt?