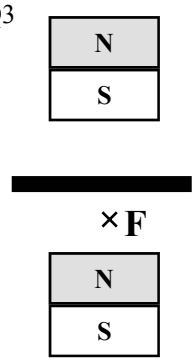
PreAP: Due Wed., May 3 (Assigned Mon., May 1)
Reg. Due Thurs., May 4 (Assigned Tues., May 2)

# Magnetism 5

Q1,2


1. Show B around the above wires.
2. Are the two wires attracting or repelling?

Q3

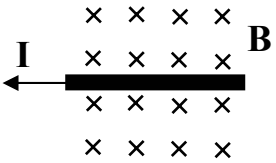



3. Which direction will the current in the wire be at the right?

Q4

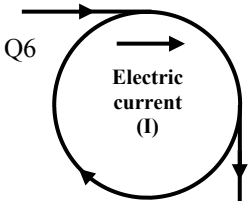

4. Which direction is B to cause the force on the above wire?

Q5




5. Find the force on the wire at the right.

Q6




6. Find the direction of B for the current carrying loop.

7. Draw B of the wire below above and below the wire.

8. On the wire below:
   A) which direction is B in front of the wire?
   B) which direction is B behind the wire?

Q7

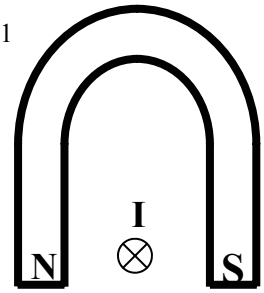

Q8


9. Use the two wires at the right to answer the following:
   A) What causes a force on wire 2?
   B) What direction is B from wire 1 at wire 2 ($B_{1at2}$)?
   C) What direction is q for wire 2?
   D) What direction is the force on wire 2?

Q9,10


10. Find the direction of the force on wire 1.

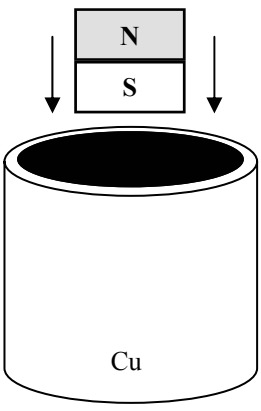
Q11



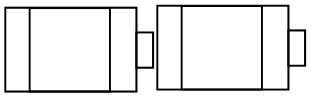

11. If the circle with the X is the current carrying wire, find the direction of F.

12. A magnet is dropped into a copper tube.
   A) Is the magnet attracted to the copper?
   B) What force pulls down on the magnet?
   C) What is the acceleration due to gravity?
   D) Does the magnet drop faster or slower than the acceleration of gravity?
   E) Why?

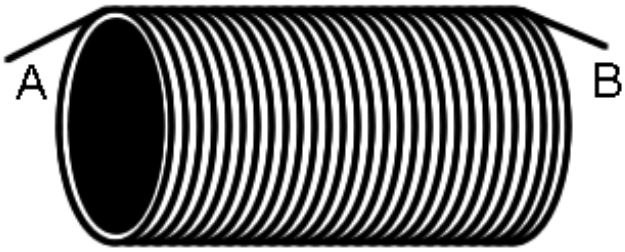
Q12



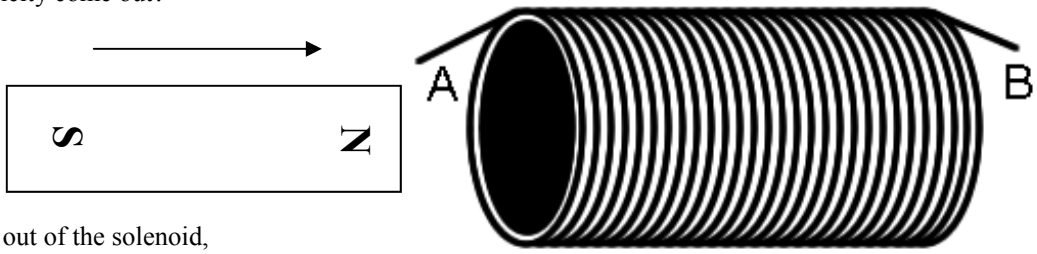
**Magnetism 5**



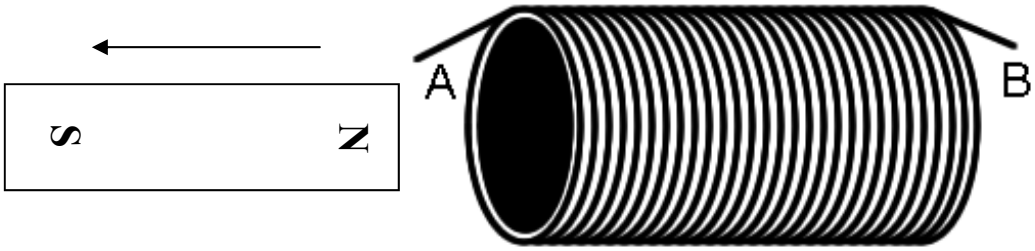
13. You are going to use two batteries to create a magnetic field in a solenoid.
    A) Mark the positive and negative side of the combined batteries.
    B) Are the batteries in series or in parallel?
    C) Draw wires from the batteries to the solenoid that makes the north of the magnetic field go to the right.




14. A bar magnet is moved into a solenoid.
    A) Since a north is being pushed into the solenoid, what magnet will the solenoid create?
    B) Using what you just found, from which end of the solenoid will the electricity come out?




15. When the bar magnet is pulled out of the solenoid, from which end will the electricity come out? *(Use the same logic as before.)*




16. An electromagnet can lift a maximum of 25 paperclips. If 40 paperclips is 16 grams,
    A) What units do we use for mass?
    B) What units do we use for force?
    C) How do we get from mass to force?

    D) Find the maximum $F_{mag}$ of the electromagnet.

17. Two identical satellites are in identical orbits (same altitude) around different planets X and Y. Both planets have the same mass.
    A) Planet X has a smaller diameter, so it is more _____.
    B) Which satellite feels the greatest gravitational force on it and why?