A-day: Due Mon., May 19 (Assigned Tues, May 15)
B-day: Due Tues., May 20 (Assigned Wed., May 16)

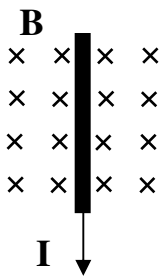
# 2008 Magnetism 5

*Q1A-C*


*Q1D*


1. The wire above has current moving in it to the left.
   A. What is the direction of the magnetic field (B) above the wire?
   B. What is the direction of B behind the wire?
   C. What is the direction of B below the wire?
   D. You now know the direction of B below the wire. Use this magnetic field to find the direction wire 2 (at right) will move due to wire 1.

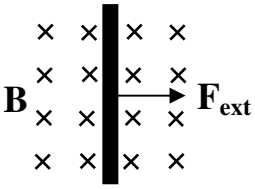
*Q2*




2. If a battery is causing I in the wire at the left, find the direction the wire will deflect (move).

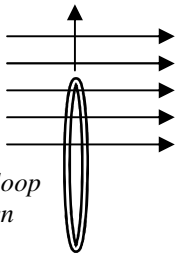
3. A wire is pushed thru a magnetic field as shown at the right.
   A. Is the magnet moving the wire?
   B. What is q for the right hand rule?
   C. What direction will the induced current flow in the wire?

*Q3*



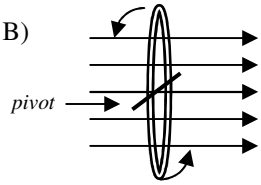

4. For each of the following instances decide if there will be an induced current.

A)



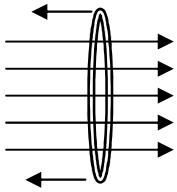
*Move the loop as shown*

B)



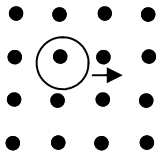

*Spin the loop as shown*

C)



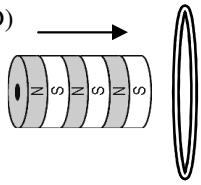
*Move the loop to the left.*

D)



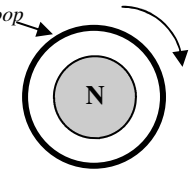
*Move the loop inside the field.*

D)



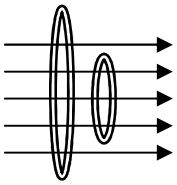

*Move a magnet into the loop*

F)



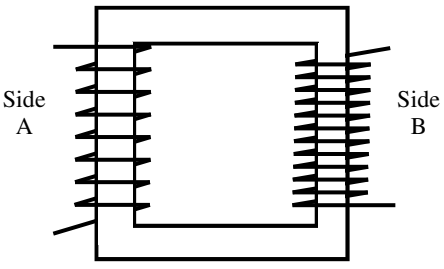

*Spin the loop around a magnet*

G)

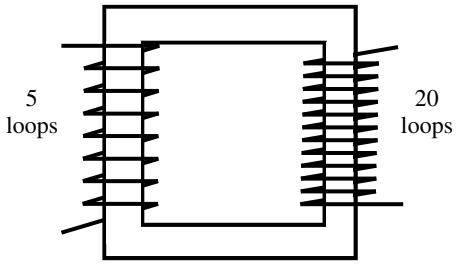


*Make the loop smaller*

5. Will a transformer be stronger or weaker with an iron core?
6. Does a transformer use AC (alternating current) or DC (direct current)?




7. Which side of the transformer: side A, side B, or N/A (both or neither)?
   A. ___ To increase voltage which side is secondary?
   B. ___ Has the biggest N?
   C. ___ Is the primary to decrease voltage?
   D. ___ Has the least coils?
   E. ___ Has the most magnetic flux?
   F. ___ Is the primary to decrease current?
   G. ___ Is the secondary to decrease voltage?
   H. ___ Is the primary to increase current?
   I. ___ Has the most power?
   J. ___ Has the most coils?




8. Side B is the primary and side A is the secondary.
   A. Is it a step up transformer or step down transformer?
   B. If 120 V AC is put into side B, how much current comes out of the transformer?

   Variables: Equation: Solve:

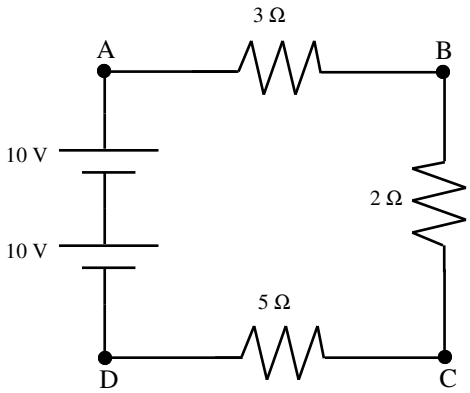
   $V_p$ =
   $N_p$ =
   $N_s$ =
   $V_s$ = ?

   C. If the input current was 3 amps, what is the output current?

9. Give two examples of transformers in everyday life.

***Review for Final***

10. Use the circuit at the right to answer the following questions.




   A) $I_{\text{thru } 2\Omega}$ =
   B) $I_{\text{thru batteries}}$ =
   C) $V_{\text{at D}}$ =
   D) $V_{\text{used by } 5\Omega}$ =
   E) $P_{\text{used by } 3\Omega}$ =
   F) $V_{\text{at C}}$ =
   G) $P_{\text{total}}$ =
   H) If the 5Ω resistor is increased to a 10Ω resistor, what happens to the current?
   I) Which resistor uses the most voltage?
   J) Which resistor uses the most power?
   K) If they were light bulbs, which one would be the dimmest?

   L) In what situation could there be 0A flowing thru point D?

   M) The second battery is then replaced by a 9v battery (*so that there is less total voltage*). Which resistor would have the most current flowing thru it?

11. Where does light come from?

12. What is electricity?

13. How do you increase the period of a pendulum?

14. If you increase the mass on a spring, how does the period change?

15. If a pendulum has a period of 0.25 seconds, find the frequency of the pendulum.