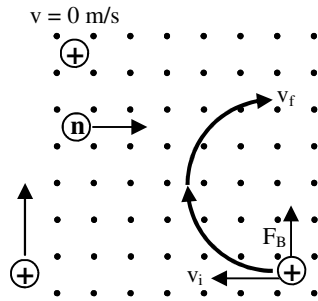


Be sure that you fixed your "Magnetic Forces" notes. The top of the page should look like this:



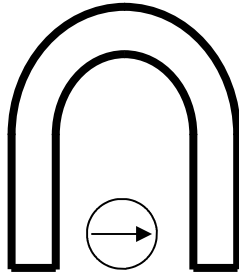
Study Helps are available for the Right Hand Rule.

Magnetic Force on a Moving Charge

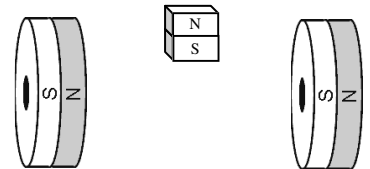
$$\text{Magnetic force (in N)} \rightarrow F_{\text{mag}} = q v B \leftarrow \text{Magnetic Field Strength (in Teslas [T])}$$

charge (in C) \nearrow q \nwarrow Velocity of q (in m/s) \nearrow

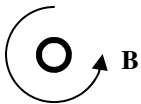
1. Label N and S on the ends of the horseshoe magnet.



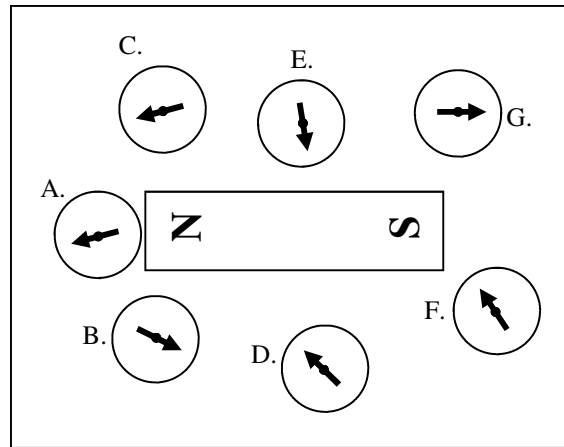
2. A. Draw B between the donut magnets.
 B. What will happen to the small magnet between the magnets?



3. Which of the compasses at the right are correct?

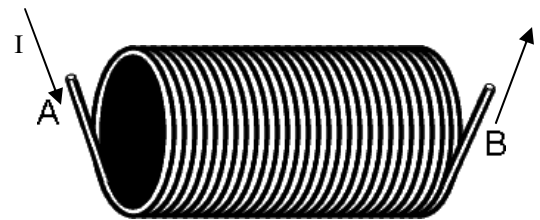
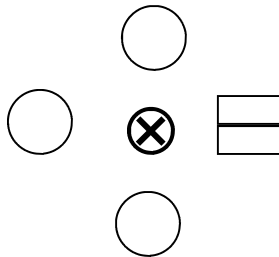


4. The small circle at the left is a wire. If the magnetic field around the wire is moving counterclockwise (CCW), is the current flowing into or out of the page in the wire?



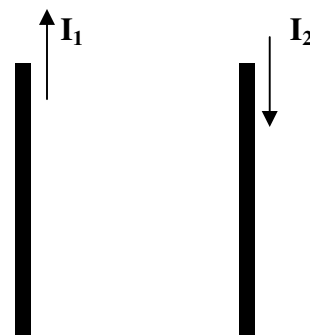
5. The X shows the direction of current in a wire.

- A. Is the current going into or out of the page?
 B. Fill in the three compasses.
 C. Draw N and S on the magnet.



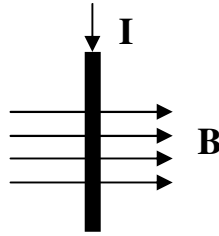
6. If current is put into side A, which side of the solenoid is its north pole?

7. A. Draw B (the magnetic field on both sides of each wire at the right) (draw it close to each wire).
 B. In between the two wires are the two magnetic fields going the same direction or opposite directions?
 C. Will the wires be attracted or repelled by each other?

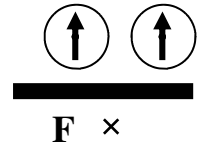


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8. The diagram below shows the current in a wire and the magnetic field around it. Use the right hand rule to find the direction of the force on the wire.

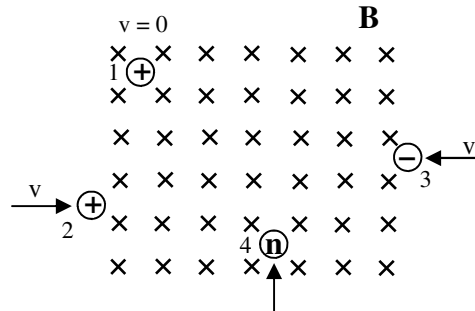


9. The compasses show you the direction of B. If the wire feels a force into the page, which direction is the current flowing in the wire?



10. There are four objects in a magnetic field. The arrows show the direction of their initial velocities when they enter the field. The charge of each object is also given.

- A. The proton at the top left (object 1) is at rest, what is the direction of the magnetic force (F_B)?
 B. Draw the path that the moving proton (object 2) at the bottom left will follow.

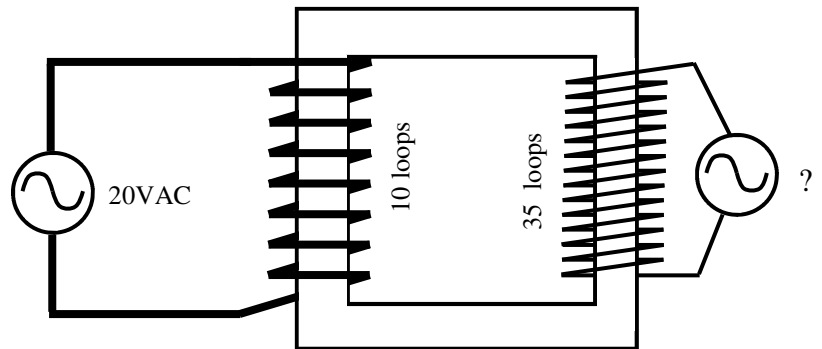


- C. Draw the path that the electron (object 3) will follow.
 D. What is the direction of the magnetic force on the neutron (object 4) labeled "n"?

Use the formula on the front to answer the following two questions.

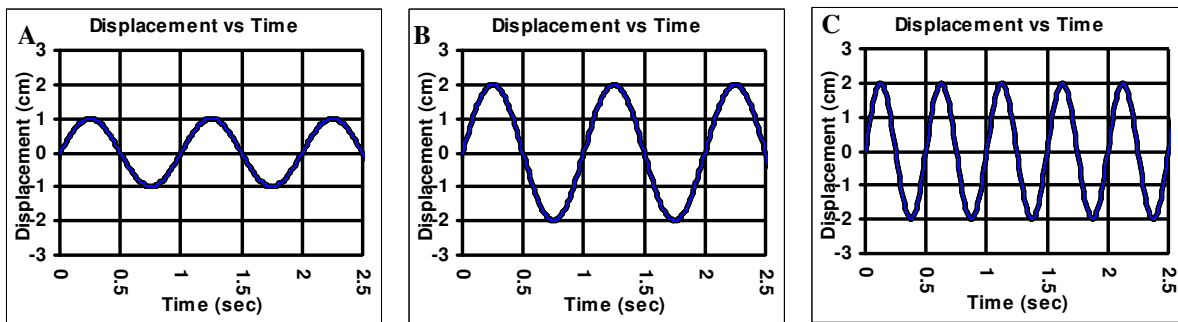
11. Find the variables for the following: 34 m/s is ____; 8 T is ____; 4.5 μ C is ____; 4 m is ____; 2.5 amps is ____.
 12. How much force does a 6 C charge going 256 m/s feel in a 75 T magnetic field?

13. The curvy symbol in the circle stands for an alternating current source (like a battery for AC). Left or Right side of the transformer at the right?
 A. ____ Has the most current?
 B. ____ Has the most voltage?
 C. ____ Has the most coils?
 D. ____ Has the most power?
 E. ____ Is the primary?
 F. ____ Is the secondary?
 G. Calculate the voltage on the right side.

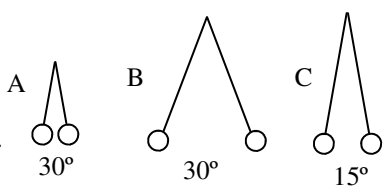
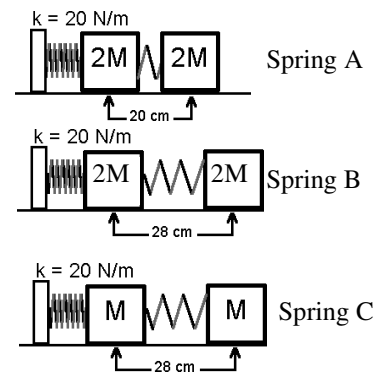


- H. Calculate the current on the right side.

14. A person yells into a cavern. After 2.4 seconds, the person hears the echo.
 A. How far does the sound travel? D or 2D?
 B. What is the speed of the sound?
 C. Find the depth of the cavern.
 15. Which of the following affects the period of a pendulum: mass, length, amplitude?



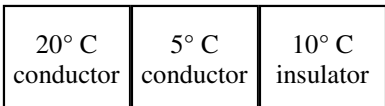
16. A. What is the period of Graph A?
- B. What is the amplitude of Graph C?
- C. Which pendulum swing slower A or B?
- D. Which spring swing faster: A or B?
- E. Which Spring has the greatest amplitude: Spring B or Spring C?
- D. Which graph is spring C?
- E. Which graph is pendulum B?



17. Give two ways to make spring C swing faster.

From "Heat" notes.

18. It is hard to change water's temperature because water has a very high:
19. On the diagram at the right
 - A. Use arrows to show the direction of heat transfer.
 - B. Draw 2 arrows for fast heat transfer.
 - C. Which object has no internal energy?
 - D. What kind of heat transfer is occurring?



20. A few molecules of a liquid is evaporating. What happens to the temperature of the liquid?

| | |
|--|------------|
| $c_{p\text{steam}} = 2010$ $Q = mc_{p\text{steam}}\Delta T$ | steam A |
| $Q = mL_v$ $L_v = 2.26 \times 10^6$ | B |
| $Q = mc_{p\text{water}}\Delta T$ $c_{p\text{water}} = 4186$ | water C |
| $Q = mL_f$ $L_f = 3.33 \times 10^5$ | D |
| $Q = mc_{p\text{ice}}\Delta T$ $c_{p\text{ice}} = 2090$ | ice E |

21. At what temperature does water turn to ice?
22. At what temperature does water turn to steam?
23. 5 kg of water is originally at -5°C and is heated up to 60°C .
 - A. What state of matter was the water at originally: solid, liquid, or gas?
 - B. What state of matter did water end up as?
 - C. How many degrees did the water increase in its first state?
 - D. How many degrees did the water increase in its second state?
 - E. Did the water under go fusion or vaporization?
 - F. Use the diagram at the left (and your notes on "Heat" and "Latent Heat") to calculate the total heat necessary to raise the water's temperature.