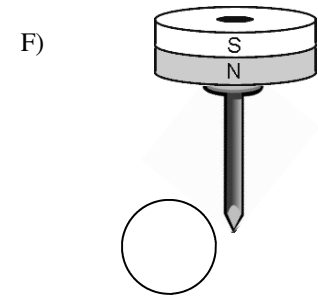
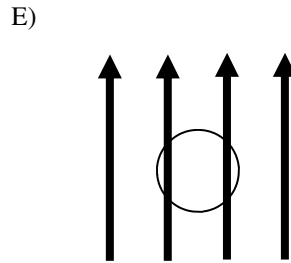
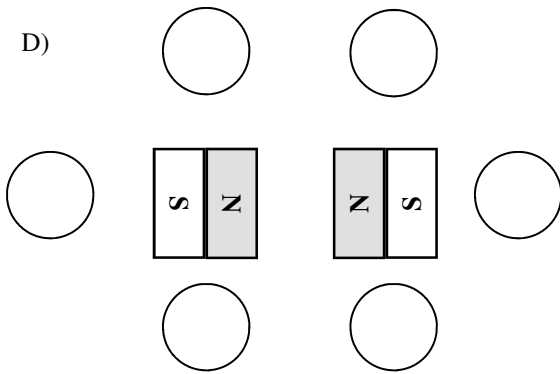
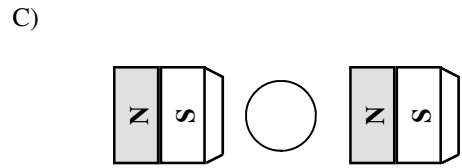
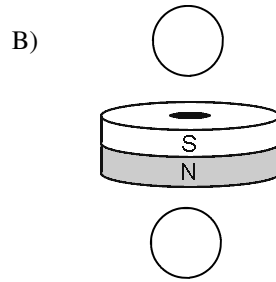
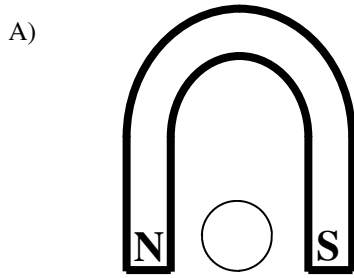
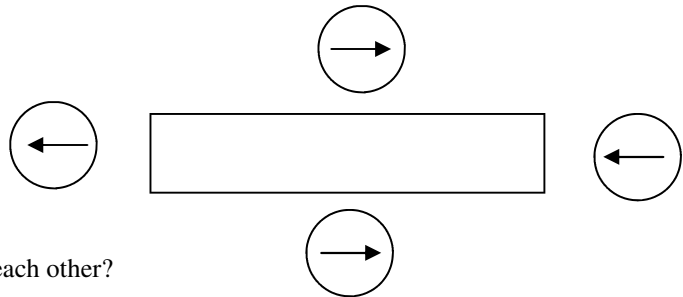


1. A compass needle points toward which pole of a magnet?
2. For the following diagrams, draw the arrow inside the compasses to show which way each compass will point.



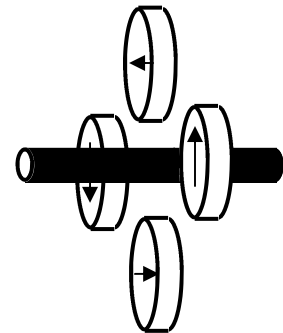
3. Mark the north and south poles of the bar magnet at the right.



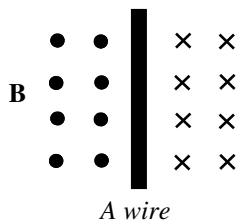
4. A. What happens when two compasses are on top of each other?

B. Why?

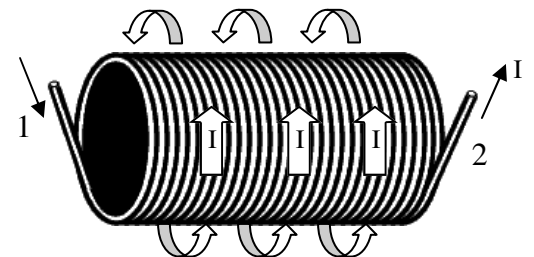
5. What do we call a magnet suspended above another magnet?
6. In the diagram at the right, use the compasses to decide which direction the current flowing in the wire: to the right or to the left?



7. (From the "Magnetic Field" notes.)
  - A. In the diagram below, which direction is the magnetic field (B) on the left side of the wire: into or out of the page?
  - B. Which direction is the magnetic field (B) on the right side of the wire?
  - C. Which direction is the current flowing in the wire?



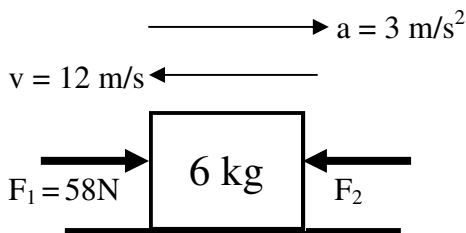
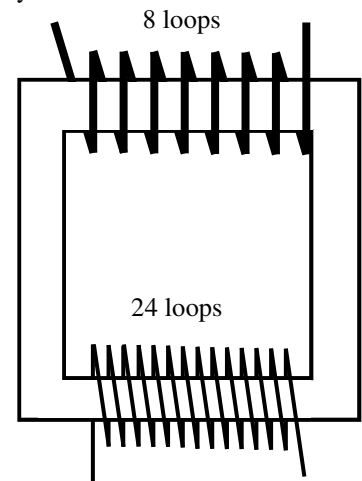
8. A. The group of coiled wires at the right is called a s\_\_\_\_\_.  
 B. Current flowing thru wires causes m\_\_\_\_\_.  
 C. If the current is moving as shown, which side is north?



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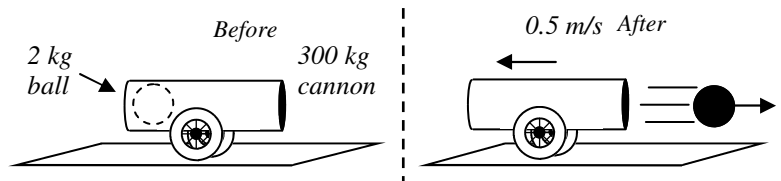
Use the “Transformer” notes to answer the following.

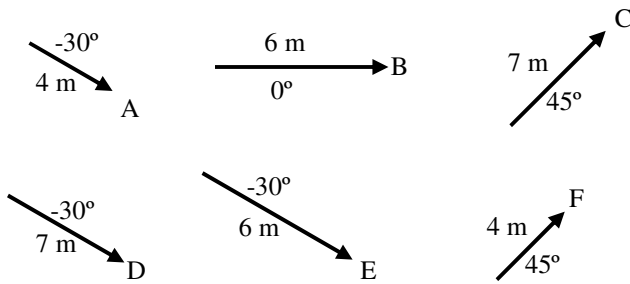
9. Which kind of current do transformers use: AC or DC?
10. What is the basic function of a transformer?
11. The input side of a transformer (where voltage is put in) is called the:
12. The output side of a transformer is called the:
13. If voltage is being decreased it is called a:
14. In a step up transformer...
  - A. Is voltage increased or decreased?
  - B. Which side has the most current: the primary or secondary?
  - C. Which side has the most coils of wire: the primary or secondary?
  - D. (From the center of the page) Which side has more power: the primary or secondary?
  - E. Which side has bigger wires: the primary or secondary?
15. What does the letter “N” stand for?
16. 120 volts AC and 6 amps is put into the bottom of the transformer at the right.
  - A) Calculate the secondary voltage.
  - B) Calculate the output power.
  - C) Calculate the output current.
17. Why do most electronics have the transformer in the power cord?



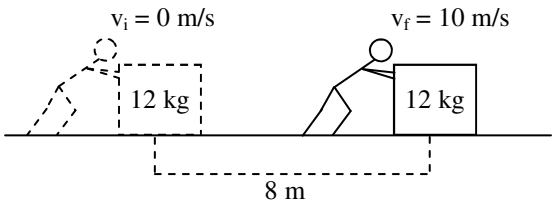
18. A 25 kg object has a velocity of  $-12 \text{ m/s}$  and has an acceleration of  $+3 \text{ m/s}^2$ .
  - A. Is the object moving to the left, to the right, or at rest?
  - B. Is the object speeding up or slowing down?
  - C. Are the forces balanced or unbalanced?
  - D. Which force is greater:  $F_1$  or  $F_2$ ?
  - E. Calculate the net force acting on the object.
  - F. Calculate  $F_2$ .

19. A cannon shoots a cannonball.
  - A. How much total momentum does the system have before it is shot?
  - B. How much total momentum does the system have after the cannon is shot?
  - C. Afterwards, which has more momentum: the cannon or the ball?
  - D. Under the diagram, calculate the velocity of the cannon ball.

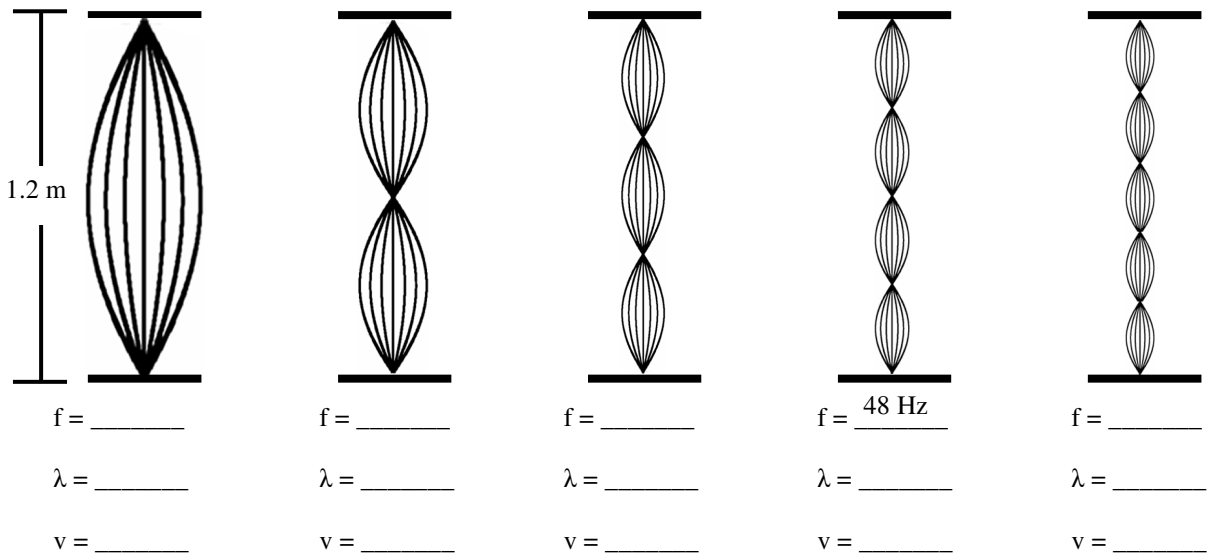




20. Magnitude or direction?  
 A. Vectors A and D have the same:  
 B. Vectors E and B have the same:  
 C. Which vector has the same magnitude as C?  
 D. Vectors F and A have different:  
 E. Vectors A and D have different:



21. A 12 kg box is at rest on the ground.  
 A. How much energy does it have to begin with?  
 Slim Jim pushes the box for 8 m. Afterwards it is moving 10 m/s.  
 B. How much energy does the box have afterwards?  
 C. If there is no friction, how much work did Slim Jim use to move the box?  
 D. Calculate the magnitude of the force Slim Jim used.



22. The above diagrams show the same 1.2 meter long string vibrated at different frequencies.  
 A. Fill in all of the information below each harmonic. (Notes: "Standing Waves" and "Waves".)  
 B. Which harmonic has the fastest wave speed?  
 C. As the wavelength gets shorter, the frequency gets:

23. A In air all sound waves have the speed of:  
 B. Which sound waves have long wavelengths: high notes or low notes?  
 C. Which sound waves have greater frequencies: high notes or low notes?