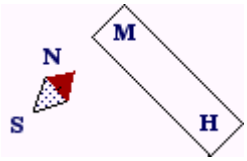
Name: _____ Practice Ph12 5-1

1. Surrounding every moving electron is
   A. an electric field
   B. a magnetic field
   C. both of the above
   D. none of the above

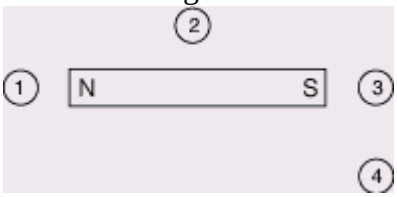
2. The fact that a current carrying wire deflects a compass needle is evidence that
   A. the current gives rise to a magnetic field
   B. the wire is magnetized
   C. the north pole of the earth has shifted
   D. the compass needle has an electric charge on it

3. A metal bar MH is brought near the N pole of a compass needle as shown in the diagram. If the N pole is repelled, we may be sure that the bar MH is:



   A. a magnet and M is a S pole
   B. a magnet and M is a N pole
   C. made of iron, but not magnetized
   D. made of a non-magnetic material
   E. not made of iron, nickel or cobalt

4. A compass is positioned at each of the following locations near a bar magnet.



   In which location will the compass needle point to the right-hand side of the page?
   A. 4
   B. 1
   C. 2
   D. 3

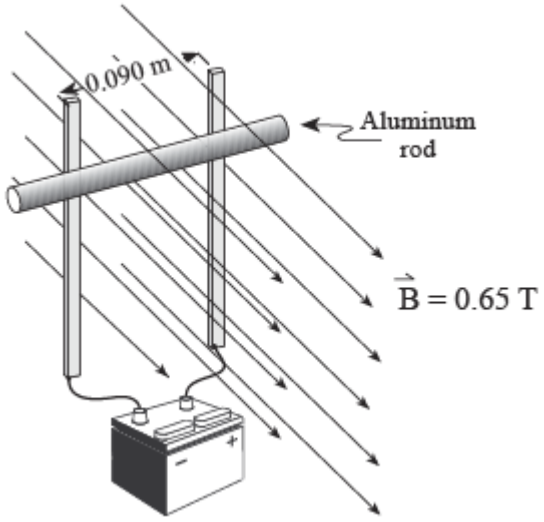
5. What happens to the magnetic force on an electron moving perpendicular to the direction of a magnetic field if the speed of the electron increases?
   A. the force decreases
   B. the force increases
   C. the force decreases, then increases
   D. the force remains the same

6. Which of the following is the force of deflection experienced by a moving charged particle in a uniform magnetic field <u>independent</u> of?
   A. mass of the particle
   B. charge of the particle
   C. magnetic field strength
   D. particle's velocity

7. A magnetic field with a strength of 5.0×10^{-2} T exists. Doubly-ionized helium atoms are projected into this field at a speed of 4.0×10^{-2} m/s at right angles to the field. What is the force that acts on each particle?

8. A current of 5.0 A flows through 40 cm of wire at right angles to a magnetic field causing a 8.0 N force on the wire. Find the strength of the magnetic field.

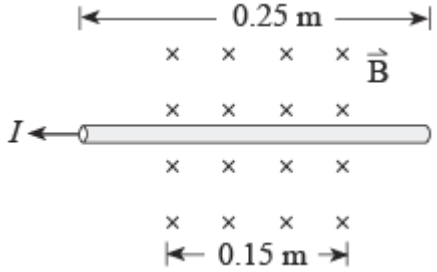
9. A 0.13 kg aluminum rod maintains contact with two vertical metal rails. A voltage is applied across the metal rails and a horizontal magnetic field of 0.65 T exists across the whole apparatus as shown.



What current (in amps) must flow through the aluminum rod to have it remain stationary?

10. A piece of wire 0.40 m long is aligned at right angles to a constant, uniform magnetic field. When the wire carries a current of 5.0 A, it experiences a magnetic force of 0.80 N. What is the strength of the magnetic field?
    A. 2.5 T
    B. 2.5×10^{-6} T
    C. 0.40 T
    D. 1.6 T

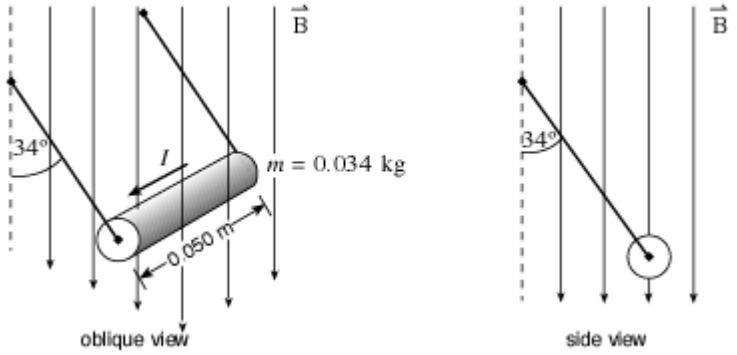
11. A wire carrying 12 A of current is placed in a magnetic field of strength 0.63 T.



What are the magnitude and direction of the magnetic force acting on the wire?

	FORCE	DIRECTION
A.	1.1 N	up the page
B.	1.1 N	down the page
C.	1.9 N	up the page
D.	1.9 N	down the page

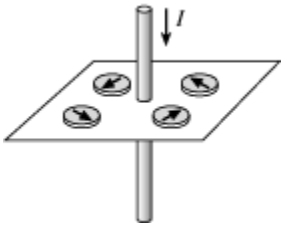
12. A 0.034 kg copper rod is hung by two wires and placed in a constant magnetic field. A current of 14 A runs through the 0.050 m long copper rod, making it hang at an angle of 34º from the vertical as shown below.

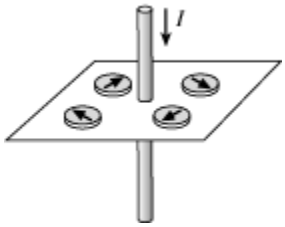


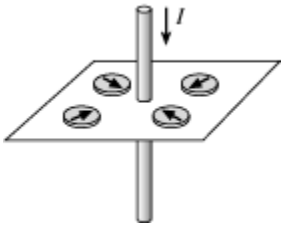
What is the magnetic field strength holding the copper rod in this position?

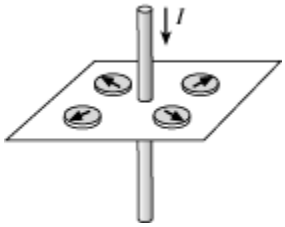
A. 4.8×10^{-1} T
B. 3.9×10^{-1} T
C. 3.2×10^{-1} T
D. 2.7×10^{-1} T

13. Which of the following diagrams best shows the orientation for a set of four compasses placed around a current-carrying wire?

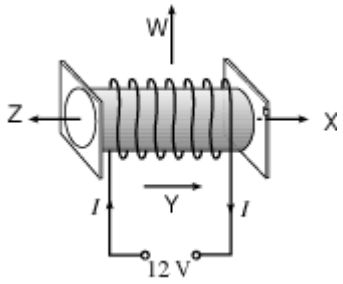
A. 

B. 

C. 

D. 

14. Which of the four arrows indicates the direction of the magnetic field when current flows in the solenoid shown below?

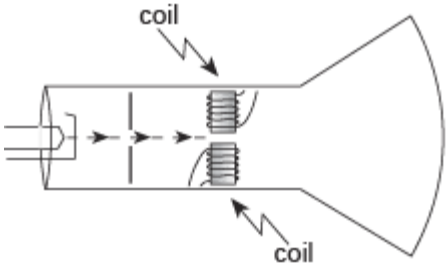


A. Z
B. Y
C. X
D. W

15. Determine the direction of the magnetic force on the current-carrying conductor in the diagram below.

A. Towards the bottom of the page
B. Towards the left
C. Towards the right
D. Towards the top of the page

16. The diagram below represents a cross-sectional view from the side of a cathode ray tube. What is the purpose of the coils in a functional cathode ray tube?



A. They deflect the electrons toward the top or bottom of the page.
B. They increase the speed of the electrons
C. They focus the electrons into a fine beam.
D. They deflect the electrons into or out of the page.