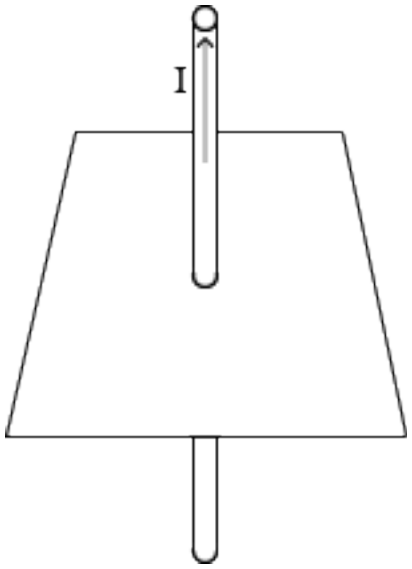
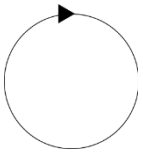
Electromagnetism Worksheet

1. A wire carrying a large constant electric current passes through the center of a perpendicular cardboard as shown.



Draw the magnetic field surrounding the wire.

2. The current in a loop of wire is flowing clockwise as shown.



Indicate the direction of the magnetic field at the center of the loop.

3. A constant electric current is flowing through a solenoid as shown.

Draw the magnetic field surrounding the solenoid.

4. A wire 0.50 m long carrying a current of 8.0 A is at right angles to a 0.40 T magnetic field. Calculate the magnitude of the force acting on the wire?

5. A wire 75 cm long carrying a current of 6.0 A is at right angles to a uniform magnetic field. The magnitude of the force acting on the wire is 0.60 N. What is the strength of the magnetic field?

6. The force acting on a wire at right angles to a 0.80 T magnetic field is 3.6 N. The current the wire is 7.5 A. What length of wire is in the magnetic field?

7. A wire 0.25 m long is in a 0.80 T magnetic field. A 0.35 N force acts on the wire. What is the magnitude of the current flowing through the wire?

8. A 5.0 cm long copper wire of mass 2.0 mg is suspended in a magnetic field of 1.0 T. What is the magnitude of the current flowing in the wire?

9. A 0.50 m wire is placed perpendicular to Earth's magnetic field (5.0×10^{-5} T). The force acting on the wire is 6.0×10^{-4} N up. What is the magnitude and direction of the current in the wire?

10. A wire 0.50 m long carrying a current of 2.0 A directed towards the north is at right angles to a uniform magnetic field. The force on the wire is 0.40 N towards the west. What is the magnitude and direction of the magnetic field?

11. A power line carries a 4000 A current from east to west parallel to the surface of the Earth. The Earth's magnetic field is 5×10^{-5} T. Calculate the magnitude and direction of force acting on the wire.

12. A 5.0 cm wire of mass 0.045g is suspended in a magnetic field of 1.2 T pointing to the north. What is the magnitude and direction of the current flowing in the wire?