Lab: Drawing Magnetic Fields AP Physics

Background
Magnetic fields are easily visualized by sprinkling "iron filings" in the vicinity of the field: the long filing line up along field lines, giving a beautiful visual model of the invisible magnetic field. In the absence of iron filings, a compass may be used as a "magnetic field tester" by placing at different locations where one wants to identify the direction of the magnetic field.

Objectives
To create magnetic field sketches for a series of different situations.

Equipment
Magnets, etc. placed in ten different stations around the lab room.

Procedure
Draw magnetic field diagrams for each of the stations set up around the room. To test the magnetic field, you may either use a compass at the station to help you determine the direction of field lines, or place an acetate over the magnets and sprinkle iron filings on top of the acetate. Do *not* sprinkle iron filings directly on the magnets! Based on your observations, draw a sketch of the magnetic field for each situation, keeping in mind:

1) Opposite magnetic poles attract, like poles repel.
2) A magnetic field line is tangent to the magnetic field at any given point. The magnetic field points in the same direction that the north arrow of a compass needle would point if placed at that spot.
3) The number of field lines in an area is proportional to the field strength in that area.

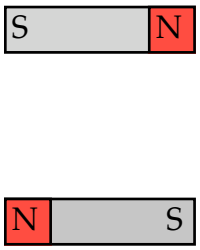
Questions
None

The Stations

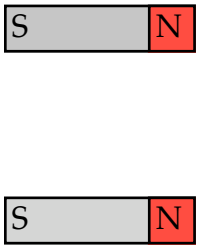
1.

2.

3.



4.



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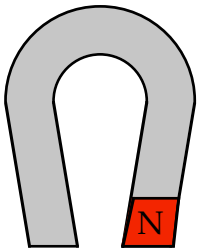
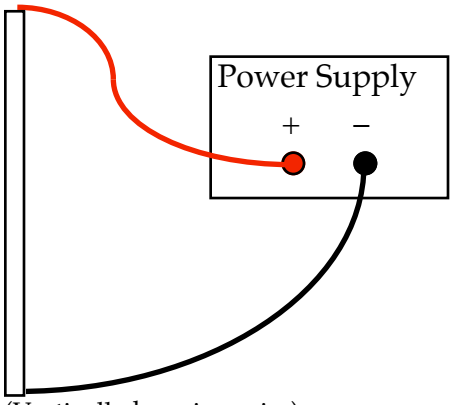
5.

6.



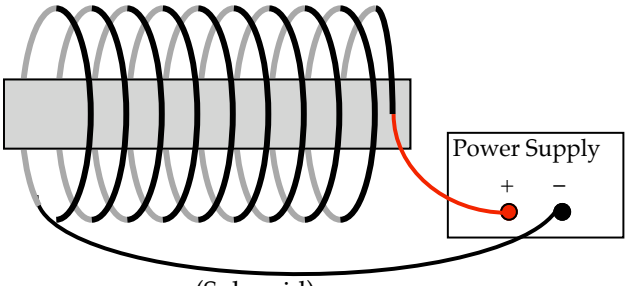
7.



(Vertically hanging wire)

If the power supply is left on for very long, the circuit breaker will shut off power supply.

8.



(Solenoid)

If the power supply is left on for very long, the circuit breaker may shut off power supply.