Magnetic Fields

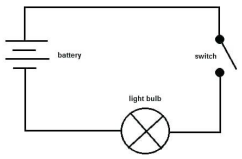
12PHYS - Electricity

Finn LeSueur

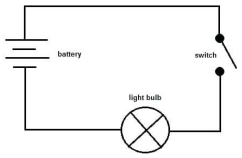
2019

Starter

The battery is 12V.



1. How many joules of energy does the cell supply to each coulomb of charge that flows out of the cell? **(A)**



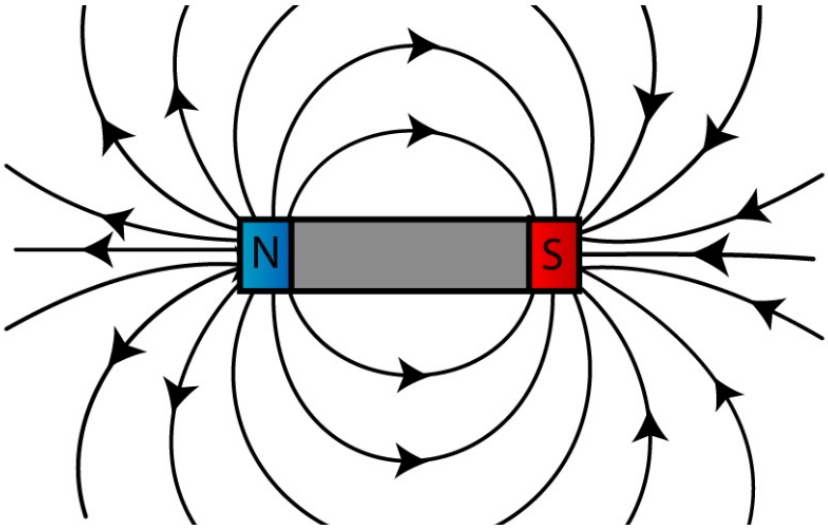
2. When the cell is switched on, the resistance of the lamp is 9Ω. Calculate the current flowing through the lame. **(A)**
3. State the meaning of the term **resistance** in terms of electron flow. **(A)**

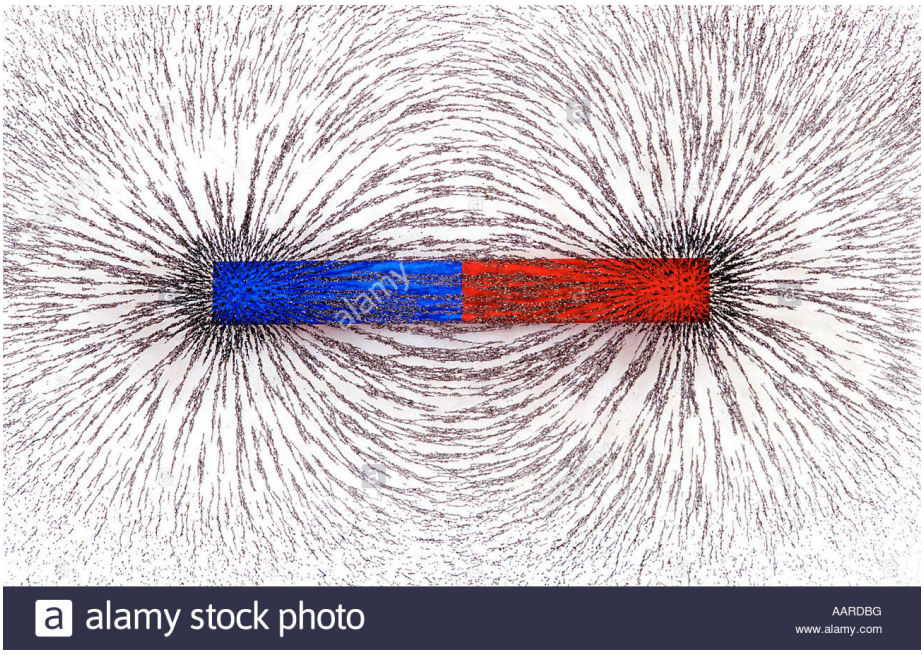
Magnetic Fields

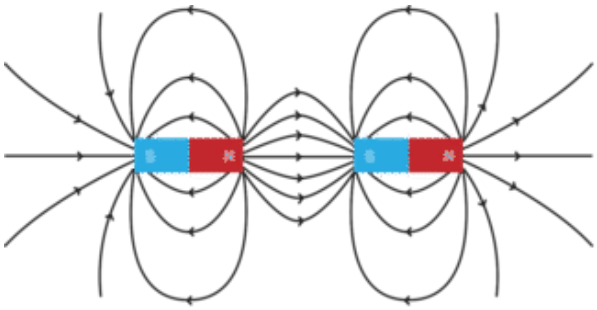
Magnetic fields can be found in two places:

- Around magnetic objects

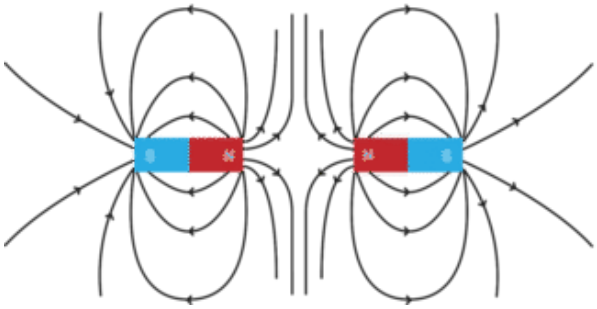
- Around current carrying wires





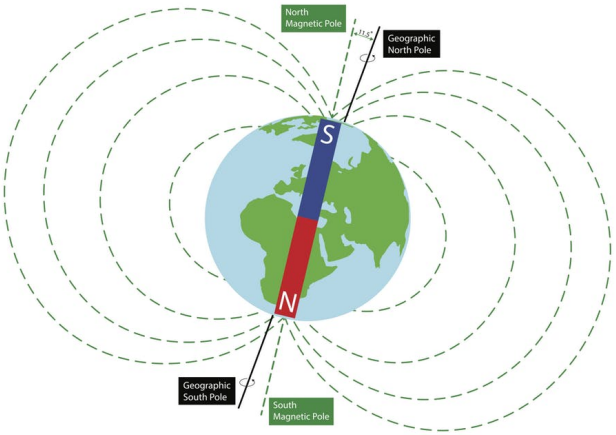


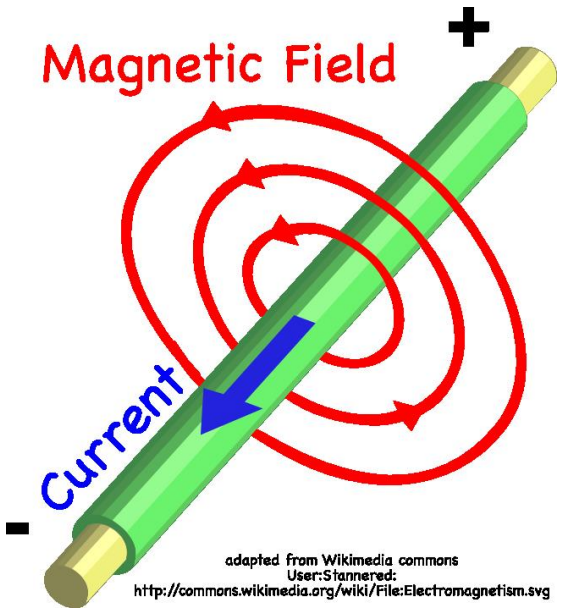
Lines of force around a north and south pole join together



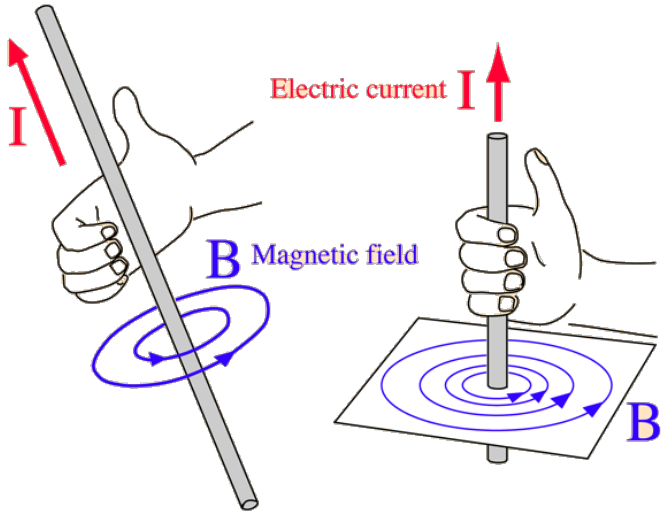
Lines of force around two north poles push apart

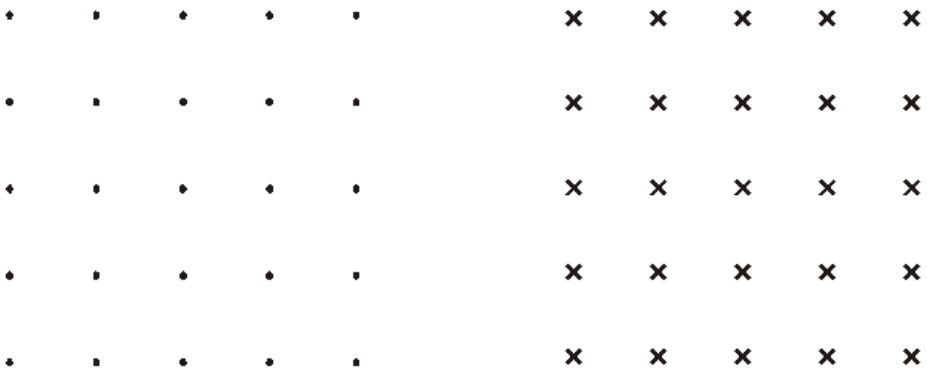
The Earth's Magnetic Field



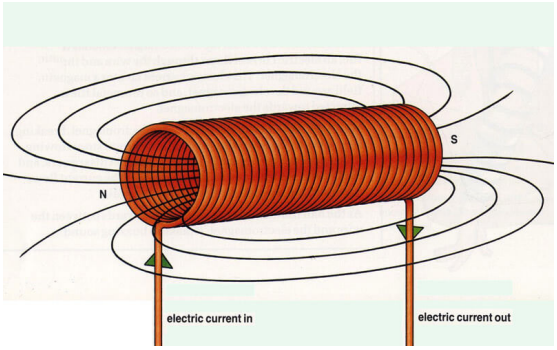


Right Hand Grip Rule 1





Solenoids



$$B = \mu_0 n I$$

What is μ_0?

It is pronounced *mew nought* and goes by a variety of names: **vacuum permeability**, **permeability of free space**, **permability of vacuum**, **magnetic constant**.

I will endevour to call it is the **permeability of free space** and it has the value:

$$\mu_0 = 1.25663706212(19) \times 10^{-6} H/m$$

Right Hand Grip Rule 2