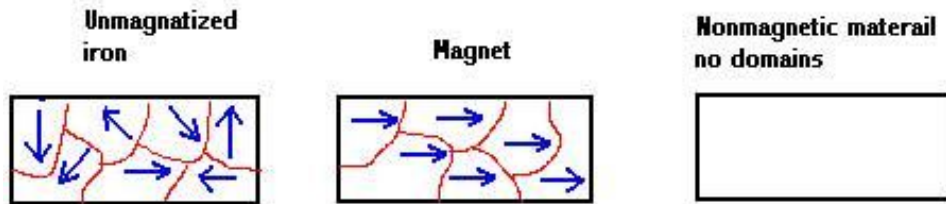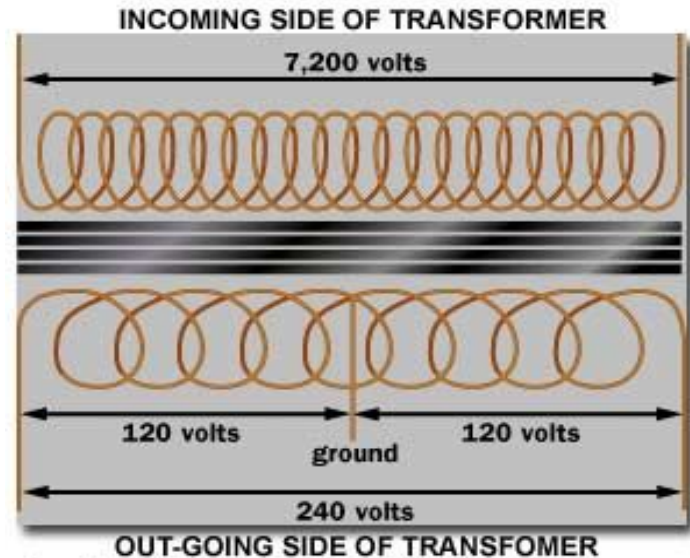# Magnetism

By Daniel, Paul,and Russell

Some yung Review

❖ Magnetic fields are created by the movement of charges.

❖ Magnetic fields go from North to South Poles.

❖ Domains are like-oriented electrons that determine the magnitude of the electric field

❖ Ferromagnets are materials that amplify magnetic properties b/c of their domains.

Unmagnatized iron
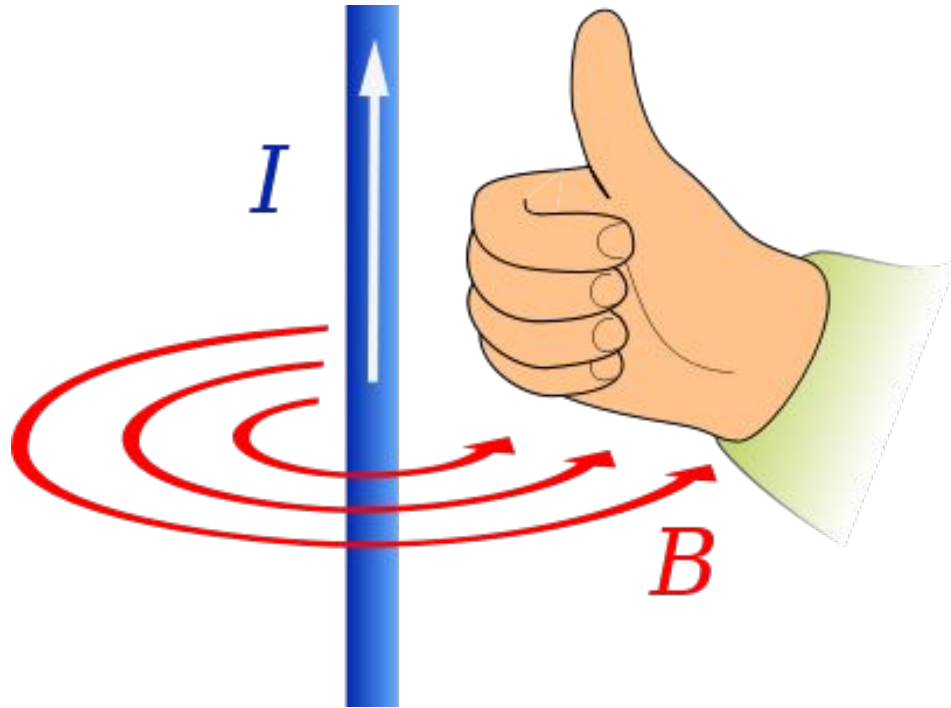
Magnet

Nonmagnetic materail no domains

Round two

❖ According to Lenz and Faraday´s Law, voltage is induced when a magnetic field is undergoing change.
❖ These laws are also used to explain the mechanics behind how transformers work.
❖ Take note of how the iron

Core that is surrounded by coil

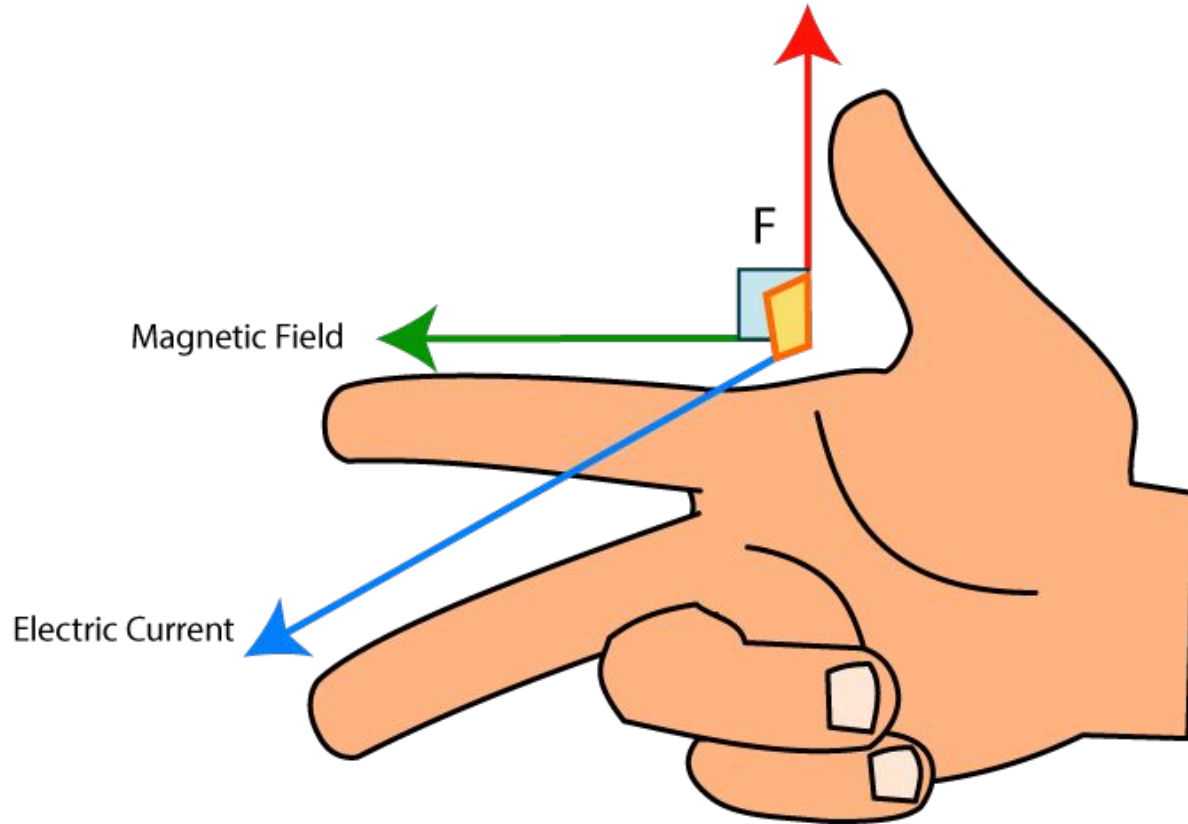**INCOMING SIDE OF TRANSFORMER**

7,200 volts

120 volts   120 volts

ground

240 volts

OUT-GOING SIDE OF TRANSFOMER

Graphic courtesy: How Stuff Works

RIght Hand Rule (Current and Magnetic Field)

I

B

Right Hand Rule (Current, Magnetic Field, and Force)

F

Magnetic Field

Electric Current

Right Hand Rule (Velocity, Magnetic Field, and Force)

Basically the Same Thing.

Some Common Misconceptions/tips...

During a test, there are many things that may confuse us however, there are easy steps that can lessen the burden towards success.

❖ You should convert **A** from Φ=BA into Φ=Bπr^2.

❖ When there is a negative charge, use the Left Hand Rule.

❖ Changing Magnetic Fields create an Electric Force and vice versa.

Some practice :^)

If a coil of wire containing 420 loops is placed in a magnetic field that oscillates between 7.3 T and 12.4 T every 1.3 s. If the induced voltage 2 V, what must be the radius of the coil?

You can do it :D

There is a current of 68A going right and a radius of 300mm. There is a fuzzy baseball ball going through the air at a speed of 2m/s with a charge of 1.3×10^{-7} C. The ball was thrown parallel to the current. Find force magnitude and direction.($\mu_o = 4\pi \times 10^{-7}$)

You have now mastered the art of magnets

Good luck on the final!