Presentations

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Blended Web/Live Course

Magnetism

Your Favorite Caption?

A. “Crazy people have sat in yours.”

B. “Well, I have to go–my ride is here.”

C. “Are there two guys with a couch following me or am I imagining it?”

Your Comments

"Forecasting direction of magnetic force"

We'll practice!

"More video of the loop moving through the magnetic field."

"I find it difficult to understand the point about conservation, and in what direction the current flow moves in relation to the proximity to the magnet field."

Induction is tough:
A little at a time

"I found the course material pertaining to magnetic fields creating electricity a little difficult. "

"Magnetic induction "

Big Ideas for the Course

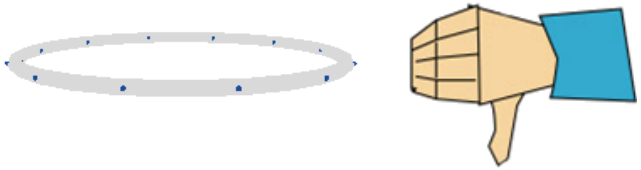
- E'nM: big step in level of abstraction

- Present main content on-line
  - Students learn at own pace
  - Carefully constructed material
- Engage students actively during class
  - Just in time intervention based on feedback
  - Peer instruction
- Homework, laboratory, problem-solving in small groups to follow

Special thanks: Gladding, Selen, Stelzer, Wiltfong

Big Ideas for Magnetism

- Magnets exert forces on each other
- Magnetic field produced by c nts
  - Direction? Right hand rule!



- Charges moving in magnetic field feel force

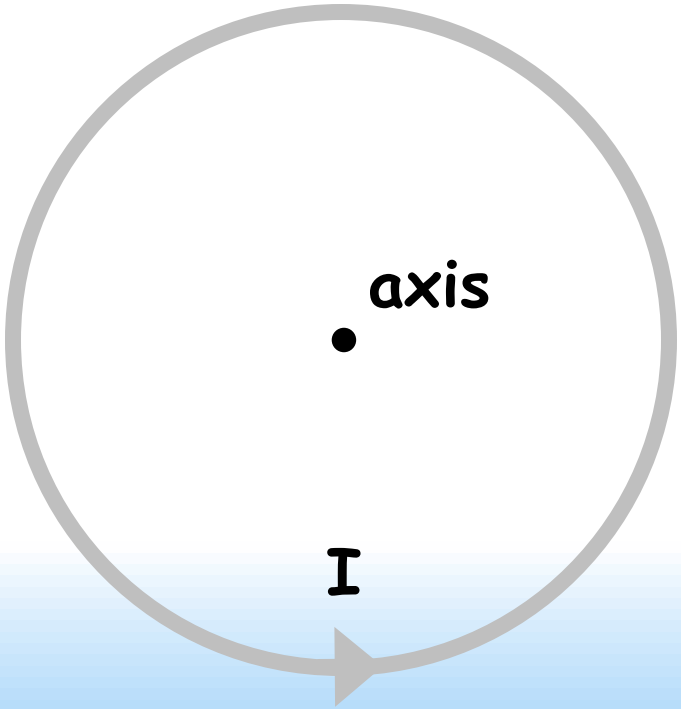
1. Current carrying wire in magnetic field feels force: electric motors
   - Electric current supplied by us → motion

2. Wire moving in field w flow: ele
   - M by us → electric current

Magnetic Induction

Checkpoint 1

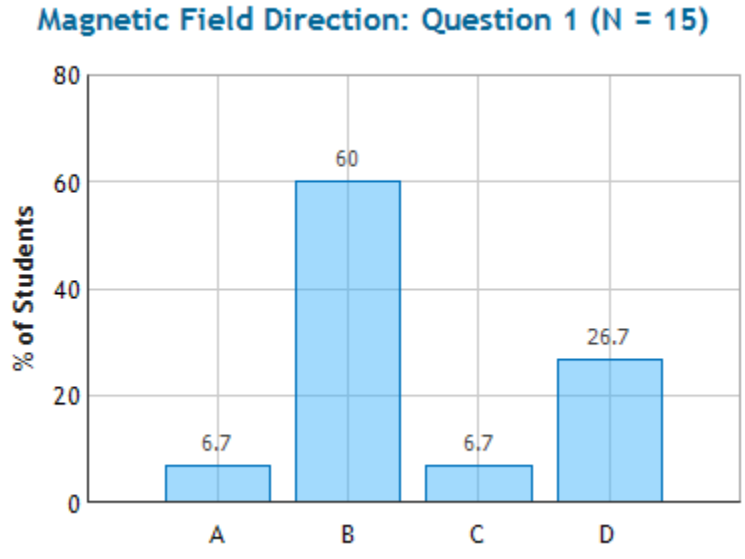
An electric current flows in a loop of wire as shown. The axis of the loop is a line perpendicular to the screen and through the center of the loop.



"D… g my ha… e pa…

"Th… n of the… '

"Ri… e the current is moving counterclockwise"



On the axis of the loop, in which direction does the magnetic field point?

A) Into the screen

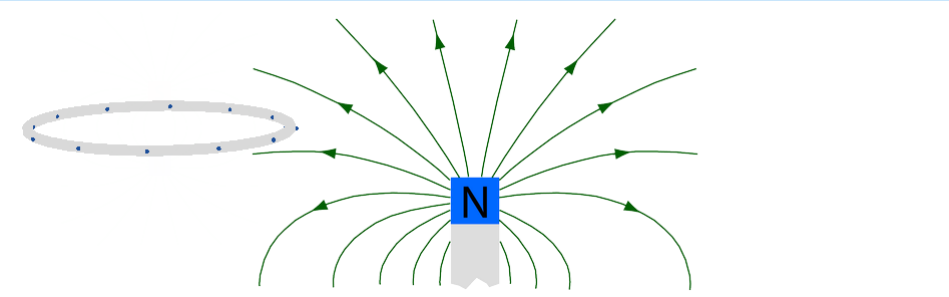
B) Out of the screen

C) Toward the top of the screen

D) Toward the bottom of the screen

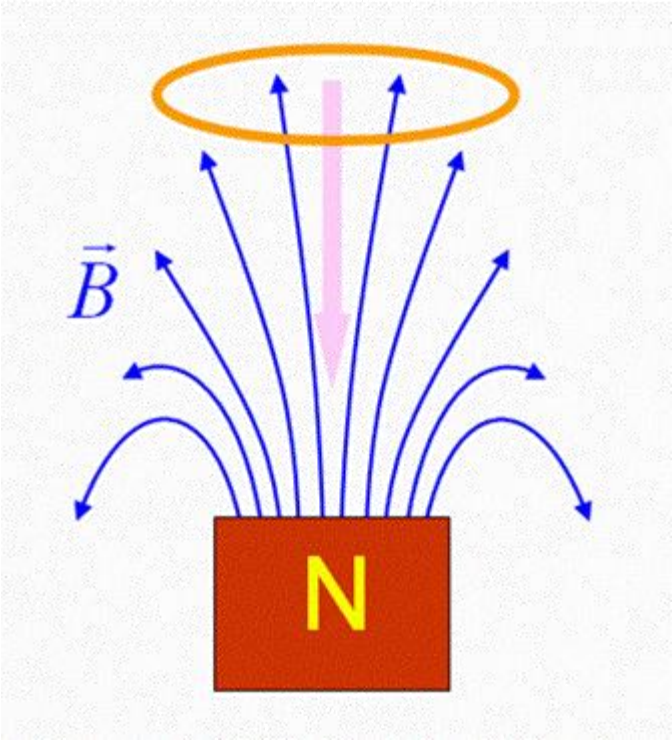
Magnetic Forces

- Charges moving in magnetic field feel force
- Magnetic induction
  - Moving a wire in a field will cause current to flow
- Current flows in direction to decrease change in magnetic field

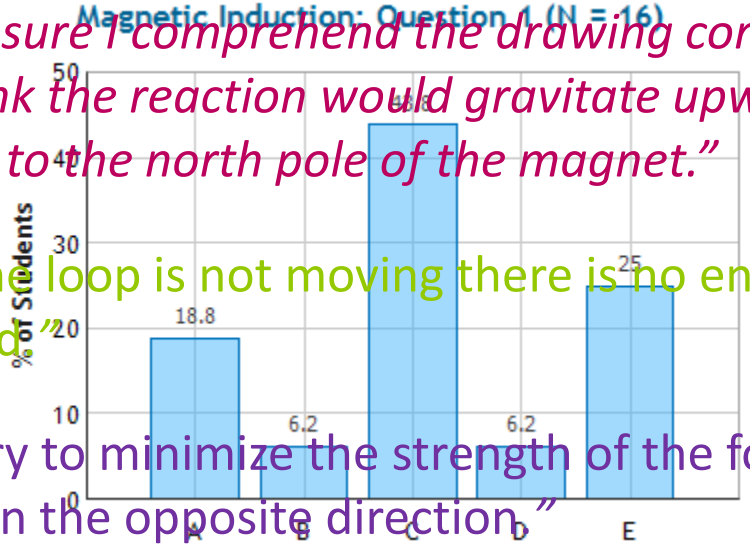


Checkpoint 2

A loop of wire, initially with no current flowing, is suspended centered above the north pole of a bar magnet as shown. The loop is now allowed to fall toward the magnet.



"I'm not sure I comprehend the drawing correctly, but I think the reaction would gravitate upward in reaction to the north pole of the magnet."



"since the loop is not moving there is no energy produced."

"It will try to minimize the strength of the force by moving in the opposite direction."

The force on the loop due to the bar magnet

A) Points toward the right

B) Points toward the left

C) Points upward

D) Points downward

Summary

- There are forces between magnets
- All magnetic fields are produced by charges in motion

- We can supply current and move wires with magnetic fields
- We can generate currents by moving wires in magnetic fields
  - The currents we generate tend to decrease the change in magnetic field

Time on PreLecture