

# Magnetism

Name: \_\_\_\_\_

Concepts:

- 1) From where does the name magnetism originate?
- 2) Electrostatics have charges, what do we call the things that magnets have?
- 3) What two properties do we know about magnetism?
- 4) What three common materials are easily magnetized? Why?
- 5) Give three ways to make a magnet.
- 6) Give three ways to destroy a magnet.
- 7) What is a magnetic domain?
- 8) If you break a magnet, what do you get?
- 9) How small of a magnet can you get?
- 10) What is a magnetic field?
- 11) Which causes which? ( magnet or magnetic field )
- 12) Which way do magnetic fields go?
- 13) What is the difference between a dipole and a monopole? Which one applies to magnetism?
- 14) Since a current is composed of moving charges, do wires have magnetic fields? What shape are they?

- 15) What does a moving charge through a magnetic field produce?
- 16) What is the angle between each of these three quantities?
- 17) What rule do we use to explain the direction of the three quantities? Explain how it works.
- 18) What is a galvanometer and how does it work?
- 19) How do the previous concepts relate to the earth?
- 20) How does an electric motor work?
- 21) How does a generator work?
- 22) What is Faraday's Law?
- 23) What is a transformer?
- 24) How does a transformer work?
- 25) Explain how to produce an electromagnetic wave.
- 26) What is another name for some electromagnetic waves?

Exercises and problems:

**For each of the following determine the direction of the third.**

- B ( magnetic field )  
v ( movement of the charge )  
F ( force )
- 27) B: Into the paper  
v: east  
F:
- 28) B:  
v: out of the paper  
F: west
- 29) B: South  
v: East  
F:
- 30) B: North  
v:  
F: South
- 31) B: out of the paper  
v: north  
F:
- 32) B:  
v: east  
F: south

**For each of the following calculate the missing quantities for a transformer: Show all work.**

- 33) Current in: 5 amps  
Voltage in: 120 volts  
Turns on the primary: 100 turns  
Turns on the secondary: 2000 turns  
Current out:  
Voltage out:
- 34) Current in: 10 amps  
Voltage in: 220 volts  
Turns on the primary:  
Turns on the secondary: 10000 turns  
Current out: .5 amps  
Voltage out:
- 35) Current in:  
Voltage in:  
Turns on the primary: 10 turns  
Turns on the secondary: 2000 turns  
Current out: .1 amps  
Voltage out: 240,000 volts