

Name: _____

Unit 7 Study Guide: Circuits and Magnets

1. Know key unit vocabulary words: parallel circuit, series circuit, switch, resistor, resistance, battery, magnetic field, magnetic pole, electromagnet, Faraday's Law

2. _____ If you put a small compass in a magnetic field, the compass will
 - A. Swing randomly
 - B. Line up in a direction perpendicular to the magnetic field lines
 - C. Line up in a direction parallel to the magnetic field lines
 - D. Seek electrical charge concentrations

3. _____ Magnetic field strength is
 - A. Strongest close to a magnet
 - B. Strongest far from a magnet
 - C. Constant everywhere around a magnet
 - D. Nonexistent with magnets.

4. A 20-V potential difference is applied across a parallel combination of a 10-ohm and a 30-ohm resistor. What is the current in the 10-ohm resistor? (Remember in a parallel circuit simply divide the voltage by the resistor in question)

5. A 20-V potential difference is applied across a parallel combination of a 60-ohm and a 30-ohm resistor. What is the current in the 30-ohm resistor?

6. A 20-V potential difference is applied across a series combination of a 10-ohm and a 50-ohm resistor. What is the current in the 10-ohm resistor? (Remember in a series circuit to add up all of the circuit's resistance and divide the voltage by the resistance to find the current)

7. Draw a series circuit with a switch, 2 resistors, and a battery.

8. Draw a parallel circuit with 3 resistors and a power source.

9. What happens to light bulbs in a series circuit if one bulb burns out? What about in a parallel circuit?

10. How does the light intensity change in a series circuit as more bulbs are added? What about in a parallel circuit? Why does this occur?

11. If two magnets are set with the following pattern, what happens:

N N: _____ N S: _____ S S: _____

12. What do you need to make an electromagnet? Sketch a picture of one below:

13. What is it called when a magnet is moved back and forth between a coil of wire? If I have three times the coils, what can I expect the voltage output to be?

14. If I heat a magnet I can destroy its magnetic properties. What is another way that I can ruin a magnet?

15. Sketch the magnetic field lines for the bar magnet below:



16. With your herculean strength you snap a magnet into two pieces. Does that mean you now have one north pole and one south pole or does each piece have a north and south pole?