1. What is the charge of an electron?

2. A 6 volt battery hooked up to a 50 ohm resistor is supplying 100 milliamps. What is the internal resistance of the battery?

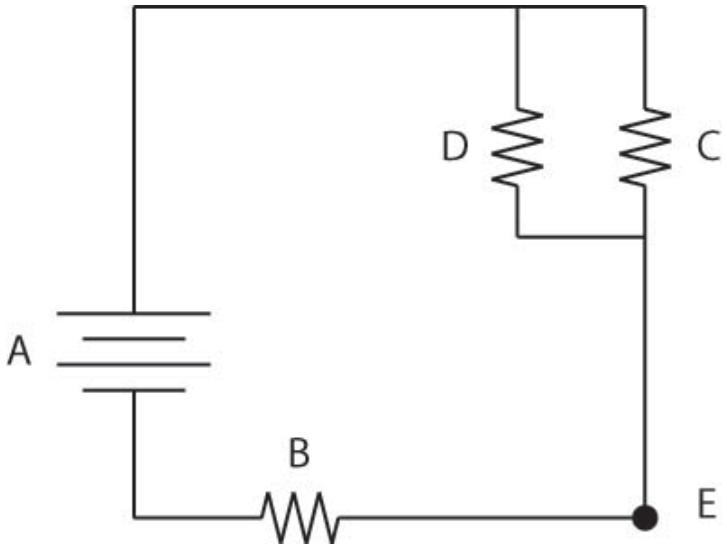
3. The battery from question 2 is shorted out. How much current is it supplying now?

4. Draw a graph of the current through a 2.5 ohm resistor as it depends on the voltage across it. The x-axis should be voltage, and the y-axis should be current through the resistor. Include voltages from -10 volts to 10 volts.

5. Define the anode of a battery.

6. What is an electrolyte?

Refer to the following circuit with ideal components:



The voltage across A is 3 volts. The resistance of B is 1 ohm. The resistance of C is 3 ohms. The resistance of D is 4 ohms.

7. If the negative terminal of the battery is ground, what is the relative voltage at point E? (In other words, what is the voltage between the negative terminal of the battery and point E?)

8. How much current is passing through D?

9. In what direction is the electric field inside A? (up or down)

10. In what direction is the electric field inside D? (up or down)

11. How much power is consumed by B?

12. What is an electric arc? What is it made of?

13. Given a current-carrying wire, how do you find the direction of the magnetic field created by it?

14. Do electric field lines ever end?

15. Do magnetic field lines ever end?

16. The magnetic flux through a wire loop is a constant 8 webers. What is the voltage induced in the wire?

17. How is magnetism used in motors?

18. Power plants and power lines usually have piles of ceramic discs all over the place. Why?

19. Give an example of a battery, and explain the chemistry behind it.

20. How would you determine which pole of a magnet is which, using a compass that points north?