433. A 3.3 Ω resistor and another resistor are connected in parallel across a 3.0 V battery. The current in the circuit is 1.41 A. Find the unknown resistance.

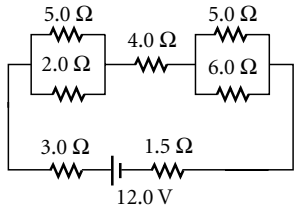
434. A 56 Ω resistor and another resistor are connected in parallel across a 12 V battery. The current in the circuit is 3.21 A. Find the unknown resistance.

435. Three bulbs with resistances of 56 Ω, 82 Ω, and 24 Ω are wired in series. If the voltage across the circuit is 9.0 V, what is the current in the circuit?

436. Three bulbs with resistances of 96 Ω, 48 Ω, and 29 Ω are wired in series. What is the current through the bulbs if the voltage across them is 115 V?

437. A refrigerator ($R_1 = 75\ \Omega$) wired in parallel with an oven ($R_2 = 91\ \Omega$) is plugged into a 120 V outlet. What is the current in the circuit of each appliance?

438. A computer ($R_1 = 82\ \Omega$) and printer ($R_2 = 24\ \Omega$) are wired in parallel across a 120 V potential difference. Find the current in each machine's circuit.

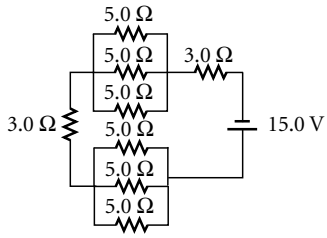


439. For the figure above, what is the equivalent resistance of the circuit?

440. For the figure above, find the current in the circuit.

441. For the figure above, what is the potential difference across the 6.0 Ω resistor?

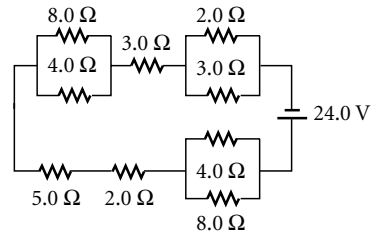
442. For the figure above, what is the current through the 6.0 Ω resistor?



443. For the figure above, calculate the equivalent resistance of the circuit.

444. For the figure above, what is the total current in the circuit?

445. For the figure above, what is the current in the 3.0 Ω resistors?



446. For the figure above, calculate the equivalent resistance of the circuit.

447. For the figure above, what is the total current in the circuit?

448. For the figure above, what is the current in either of the 8.0 Ω resistors?

Chapter 19 Magnetism

449. A proton moves at right angles to a magnetic field of 0.8 T. If the proton's speed is 3.0×10^7 m/s, how large is the magnetic force exerted on the proton?

450. A weak magnetic field exerts a 1.9×10^{-22} N force on an electron moving 3.9×10^6 m/s perpendicular to the field. What is the magnetic field strength?

451. A 5.0×10^{-5} T magnetic field exerts a 6.1×10^{-17} N force on a 1.60×10^{-19} C charge, which moves at a right angle to the field. What is the charge's speed?

452. A 14 A current passes through a 2 m wire. A 3.6×10^{-4} T magnetic field is at right angles to the wire. What is the magnetic force on the wire?

453. A 1.0 m printer cable is perpendicular to a 1.3×10^{-4} T magnetic field. What current must the cable carry to experience a 9.1×10^{-5} N magnetic force?

454. A wire perpendicular to a 4.6×10^{-4} T magnetic field experiences a 2.9×10^{-3} N magnetic force. How long is the wire if it carries a 10.0 A current?

455. A 12 m wire carries a 12 A current. What magnetic field causes a 7.3×10^{-2} N magnetic force to act on the wire when it is perpendicular to the field?

456. A magnetic force of 3.7×10^{-13} N is exerted on an electron moving at 7.8×10^6 m/s perpendicular to a sunspot. How large is the sunspot's magnetic field?