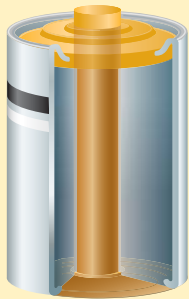


Electrical Connections

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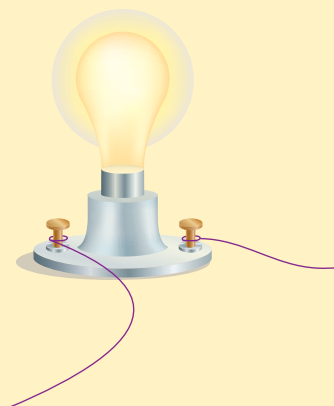
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Glossary

A page number in boldface type indicates the page on which the word is defined in the text.

alternating current (AC) current in which the electrons move back and forth (**16**, 17)

ampere (A) SI unit of current; often called an *amp* (**9**, 10)

atom tiny building blocks that make up all matter (**2**, 3, 9, 12, 16)

battery device that converts chemical energy to electric energy or a group of such devices operating together; also called an *electrochemical cell*; see also *dry cell*, *wet cell* (**7–9**, 10, 13, 15, 16)

charging by conduction touching a charged object to a neutral object in order to charge the neutral object (**4**)

charging by friction rubbing a neutral material with another neutral material in order to charge them (**4**)

charging by induction bringing a charged object near a neutral object in order to charge the neutral object (**4**)

circuit breaker device that contains either a special metal strip or an electromagnet that moves a switch to open a circuit when electric current reaches an unsafe level (**19**)

circuit diagram picture that uses symbols to show how objects in a circuit are connected (**8**)

closed circuit complete path along which electric current flows (**7**, 9, 15, 16)

conductor material through which electric current passes easily (**3–7**, 19)

direct current (DC) current in which the electrons move in one direction (**16**)

domain area in a magnet or in a material that is attracted to a magnet where the magnetic fields of the atoms line up with one another (**12**)

dry cell electrochemical cell that contains paste-like materials that undergo chemical reactions to generate electricity (**16**)

electric charge basic property of matter; can be negative or positive (**2**, 5, 7, 8, 11)

electric circuit path for electric current (**7**, 8, 16)

electric current steady, or continuous, flow of charge (**7–9**, 11, 13, 15, 16, 18–22)

electric energy energy a charge has because it is in an electric field or electric current (**2**, 7, 9, 13–16, 18, 20)

electric field space around a charged object where electric force acts (**3**, 7, 11)

electric force force that causes charged materials or objects to attract or repel each other (**3**, 4)

electric motor device that uses magnets to change electric energy into kinetic energy (**14**)

electric potential potential energy per unit of electric charge in a circuit (**8**)

electric power rate at which electric energy is changed to other forms of energy (**18**)

electrochemical cell device that converts chemical energy to electric energy; also called a *battery*; see also *dry cell*, *wet cell* (**16**, 21)

electrolyte compound that forms positive and negative ions when it dissolves in water (**19**)

electromagnet temporary magnet made when electric current flows through a wire wrapped around an iron or steel core (**13**, 14, 21, 22)

electron one of the three main particles that make up atoms; has a negative charge (**2–6**, 16)

electroscope instrument that detects electric charge (**5**)

ferromagnetic material material that is attracted to a magnet: iron, cobalt, nickel, or material that contains these metals (**11**)

fuse device that contains a metal wire that melts, or “blows,” and opens a circuit when electric current reaches an unsafe level (**19**)

galvanometer instrument that detects electric current (**13**)

generator device that uses magnets to change kinetic energy into electric energy (**15**, 17, 20)

gravitational potential energy stored energy (**8**)

grounding connecting an object to Earth with a conductor (**6**)

induced charge area of charge caused by induction (**4**)

insulator material through which electric current does not pass easily (3–7)

ion atom with a net positive or net negative charge (2, 16, 19)

kilowatt (kW) unit of electric power equal to 1,000 watts (18)

kilowatt-hour (kWh) unit of electric energy equal to the work done by one kilowatt in one hour (18)

lightning naturally occurring, rapid, and powerful static discharge (6, 7, 15)

lightning rod device that protects buildings from lightning strikes by providing a grounded path for the static discharge (6)

magnet material that attracts the metals iron, cobalt, and nickel (11–15, 21, 22)

magnetic field space around a magnet where the magnet's force acts (11, 12, 13, 15, 17, 21, 22)

magnetic field lines invisible lines that show the direction and strength of a magnetic field; also called *lines of force* (12)

magnetic force pull of a magnet on ferromagnetic materials; often called *magnetism* (11, 12)

magnetic pole one of two places on a magnet where magnetic force is the strongest (11, 13)

magnetism another term for *magnetic force* (11, 12)

neutron one of the three main particles that make up atoms; has no charge (2, 3)

nonrenewable energy source energy source that cannot be replaced once it is used (20)

nucleus center of an atom, made up of protons and neutrons (2, 3)

ohm (Ω) SI unit of resistance (9, 10)

Ohm's law statement that the current in a circuit equals the voltage divided by the resistance (9, 10)

open circuit interrupted electric circuit through which current cannot flow (8)

parallel circuit electric circuit in which the current follows multiple paths (10)

permanent magnet magnet that holds its magnetic properties for a long time because its domains stay lined up (12–14)

potential difference measure of the change in electric energy per electron from one point to another; also called *voltage* (8, 9, 16)

power rate at which energy is used (14–18, 19, 20)

proton one of the three main particles that make up atoms; has a positive charge (2, 3, 5, 6)

renewable energy source energy source that is replaced naturally (20)

resistance measure of a material's ability to limit the flow of electric current (7, 9, 10, 19, 22)

resistor device that resists the flow of current and changes electric energy into another form of energy (7)

separation of charge rearrangement of electrons on an object (4, 6)

series circuit electric circuit in which the current follows only one path (10)

short circuit condition that occurs when electric current takes a path that is not intended (19)

static charge excess positive or negative electric charge on a material or object (3, 6)

static discharge loss of static charge (6)

static electricity term commonly used to describe the buildup of charge on an object (3, 15)

switch device that can interrupt the path for electric current in a circuit (8, 9)

temporary magnet magnet that loses its magnetism after a short time because its domains do not stay lined up (12–14)

transformer device that changes the voltage of alternating current (17)

volt (V) SI unit of potential difference (8–10, 16)

voltage measure of the change in electric energy per electron from one point to another; also called *potential difference* (8–10, 16–18)

watt (W) SI unit of power (18, 19)

wet cell electrochemical cell that contains a liquid that undergoes chemical reactions to generate electricity (16)