

13. How does a motor convert electrical energy into mechanical energy?



Go to http://www.bbc.co.uk/schools/scienceclips/ages/10_11/changing_circuits.shtml and play the “Changing Circuits” **game**. Click the top arrows to try all changes to the circuit.

14. Why does a light bulb become brighter when voltage is increased?

15. Why does a light bulb become dimmer when the length of wire is increased?



Go to <http://www.learningcircuits.co.uk/> to learn about symbols used to draw electric circuits in the “Building Circuits” **game**.

16. Draw the symbol for each component.

battery

motor

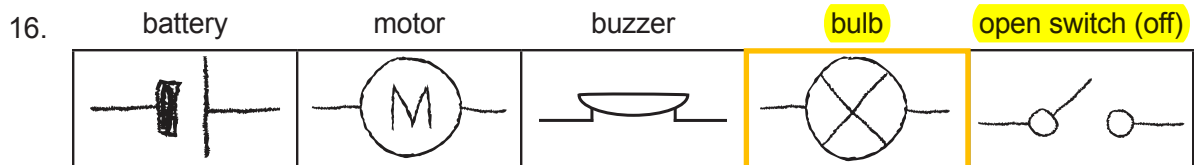
buzzer

bulb

open switch (off)

--	--	--	--	--

17. Practice building circuits in the game. Then draw a closed circuit with a battery and a motor that sounds a buzzer when the switch is closed.



17. Pictures will vary but should include the symbols from question 16.

Energy and Conservation pp. 87-89

1. Energy is the ability to do work.
2. Kinetic = moving energy
Potential = stored energy

Form of Energy	Characteristics	Example
Thermal (Heat) Energy	The collective kinetic and potential energy of molecules in an object, measured in temperature; the higher the temperature, the faster the molecules are moving and storing energy.	hot cup of coffee (or anything hot)
Chemical Energy	A form of microscopic potential energy; exists because of the forces of attraction between molecules causing chemical reactions.	glucose releasing energy in a body; battery (or any chemical reaction)
Electrical Energy	Electrons moving among atoms forming an electric current; measured in volts; materials have conductivity or resistance to electricity.	electrical outlets, switches (or any substance carrying an electrical current)
Sound Energy	Compression waves of the potential and kinetic energy of air molecules.	head of a drum compressing and expanding air (or anything that makes sound)

4. Sample answer:
Conduction transmits heat energy by vibrating particles. Conduction would be used to cook popcorn in a pot with a lid on a stovetop. The heat source would increase the movement of the molecules in the pot, which would then increase the movement in the molecules in the oil and popcorn.
Convection transmits heat energy by moving liquid or gas. Convection cooks popcorn in a hot air popper by circulating heated air.
Radiation transfers energy through electromagnetic waves. Microwave ovens use radiation to cook the popcorn kernels.
All three methods cook the popcorn by converting the water inside the kernels to steam, which expands the starch inside the kernels into puffed air starch.

5. Illustrations will vary but should include:

biomass	geothermal	hydropower	solar	wind
sun stored in plants	energy from within Earth (volcanoes, geysers, springs, etc.)	flowing water or rain	sunshine	wind