Electricity!

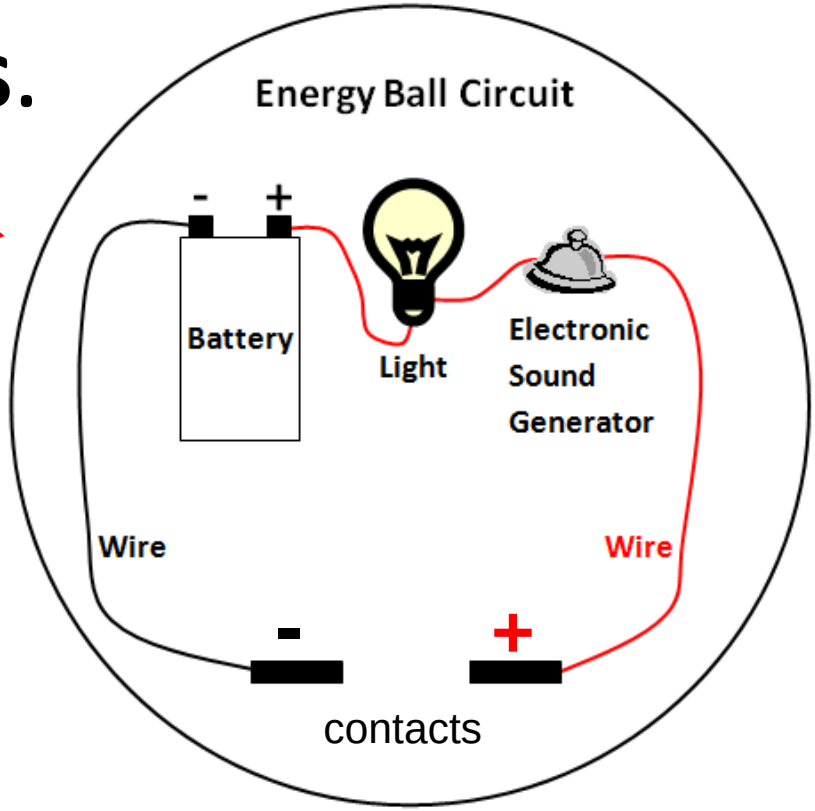
From the power plant…

How?

… to lights in your home.

Power lines contain metal wires.
Metal is a **good conductor.**

Conductors can
make **simple circuits**.



GOOD CONDUCTORS

metal

POOR CONDUCTORS

salty water

VERY POOR CONDUCTORS (GOOD INSULATORS)

wood

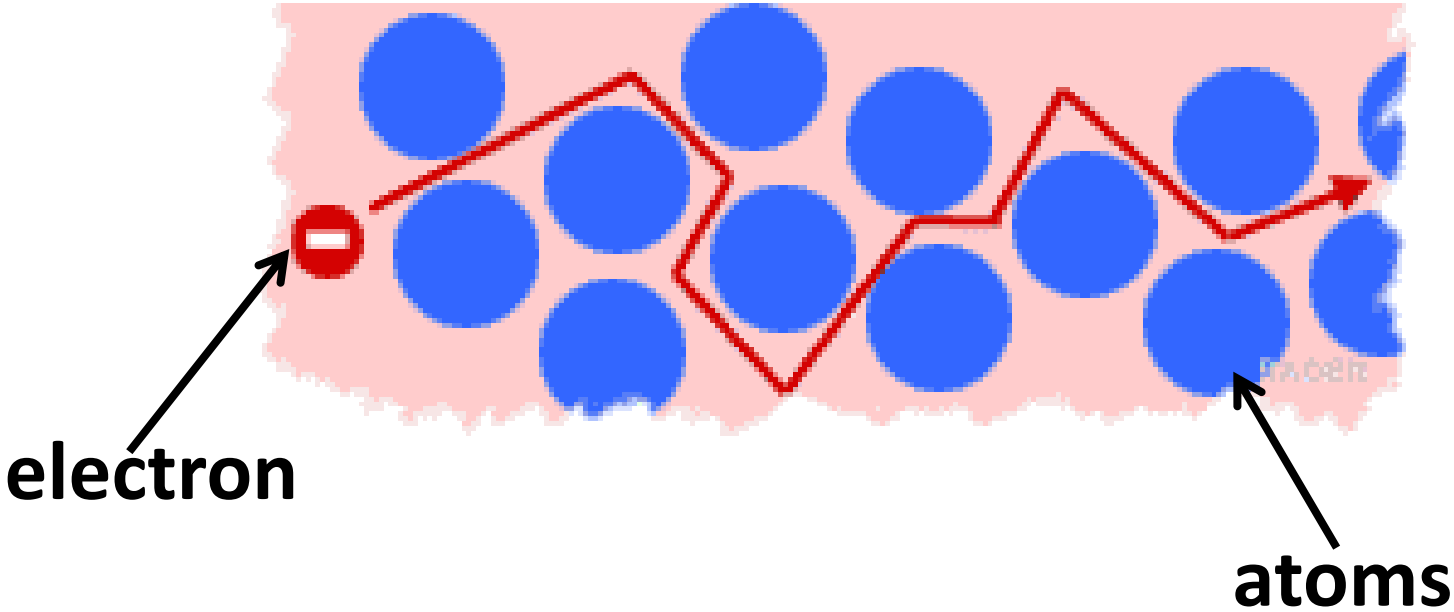
pencil lead

drinking water

plastic

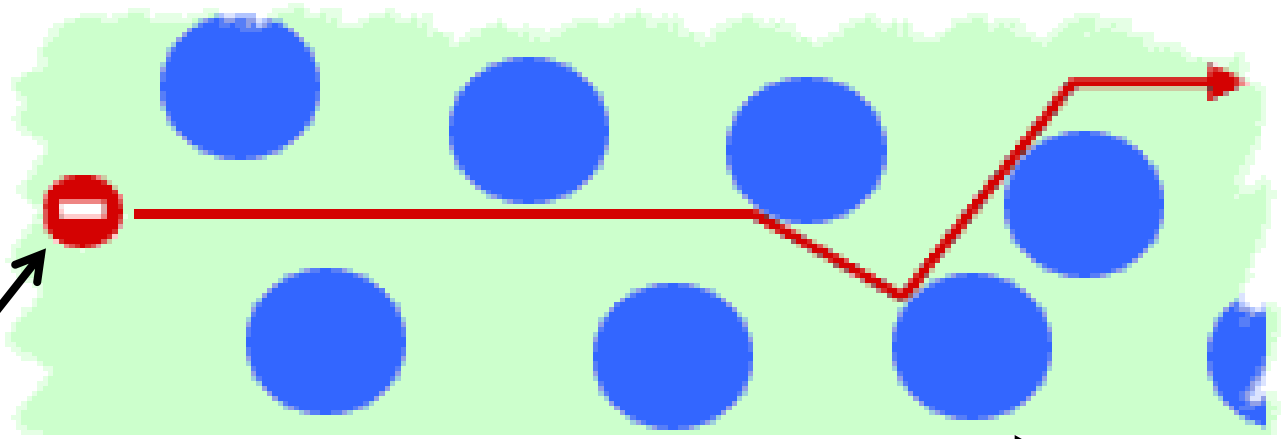
glass

Very Poor Conductors (**Insulators**) have **large resistance** to the motion of electricity.



*It is **hard** for electrons to move in an **insulator**!*

Good Conductors have a _____ **resistance** to the motion of electricity.



*It is **easy** for electrons to move in a **good conductor**!*

Engineers measure a material's **resistance** using an Ohmmeter.

Small number = **Good Conductor**!
Large number = **Poor Conductor**!

Objects	Resistance (Ω)	Good Conductor, Poor Conductor or Very Poor Conductor (Insulator)?
Metal Paperclip		G P VP/I
Plastic-Coated Paperclip		G P VP/I
“Long” Pencil		G P VP/I
“Short” Pencil		G P VP/I
“Thick” Pencil		G P VP/I
“Low-salt” dough		G P VP/I
“High-salt” dough		G P VP/I

Small number = **Good Conductor**! Large number = **Poor** or **Very Poor Conductor**!

Some materials are **better conductors** than other materials! And a material's **shape** also matters!

Some materials are **better conductors** than other materials! And a material's **shape** also matters!

Ex) Your class wants to race Mr. Davis's class down the playground slide. There are two slides on the playground. To win the race, which slide should your class use?

a long, thin slide

a short, wide slide

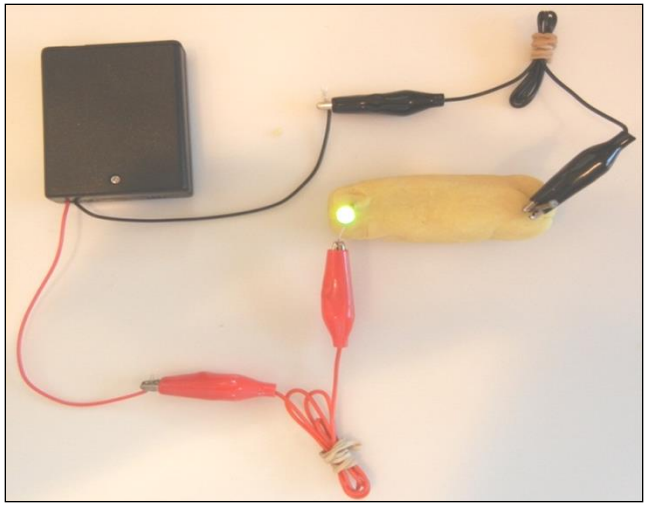
Now for a Design Challenge!

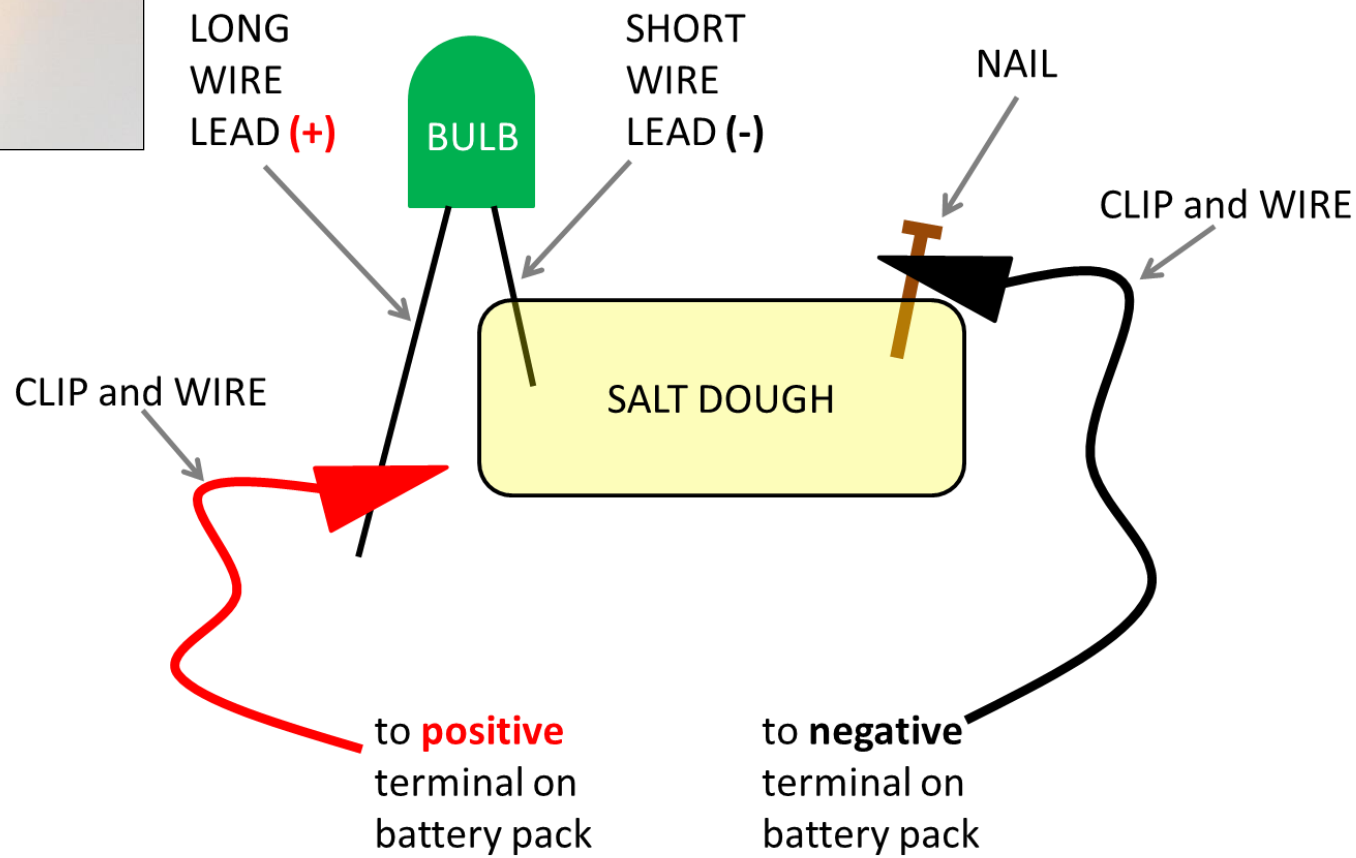
After visiting the three bears, Goldilocks wanted to send the Bear family a special gift to thank them for their hospitality. She decided on a nice lamp that would provide light that was *juussstttt* right for Papa Bear, Mama Bear, and Baby Bear.

Goldilocks contacted *This Little Light of Mine Company* and asked them to design a lamp with three brightness levels. As a *This Little Light of Mine Company* engineer, you and your team must plan, build, and test a salt dough electrical circuit that creates **a bright light**, **a dim light**, and **a light that is in-between**.

Remember that a material's **resistance** is determined by the **type** of material and **shape** of the material.

Example salt-dough circuit





Electricity Safety Rules

- Never use electrical appliances near wet areas (bathtubs, sinks, in the rain)
- Never put fingers or other objects near electrical outlets
- Never use appliances with cords showing bare wire
- Never climb trees near power lines
- Stay away from outdoor electric company equipment (meters, transformers, power lines, etc.)