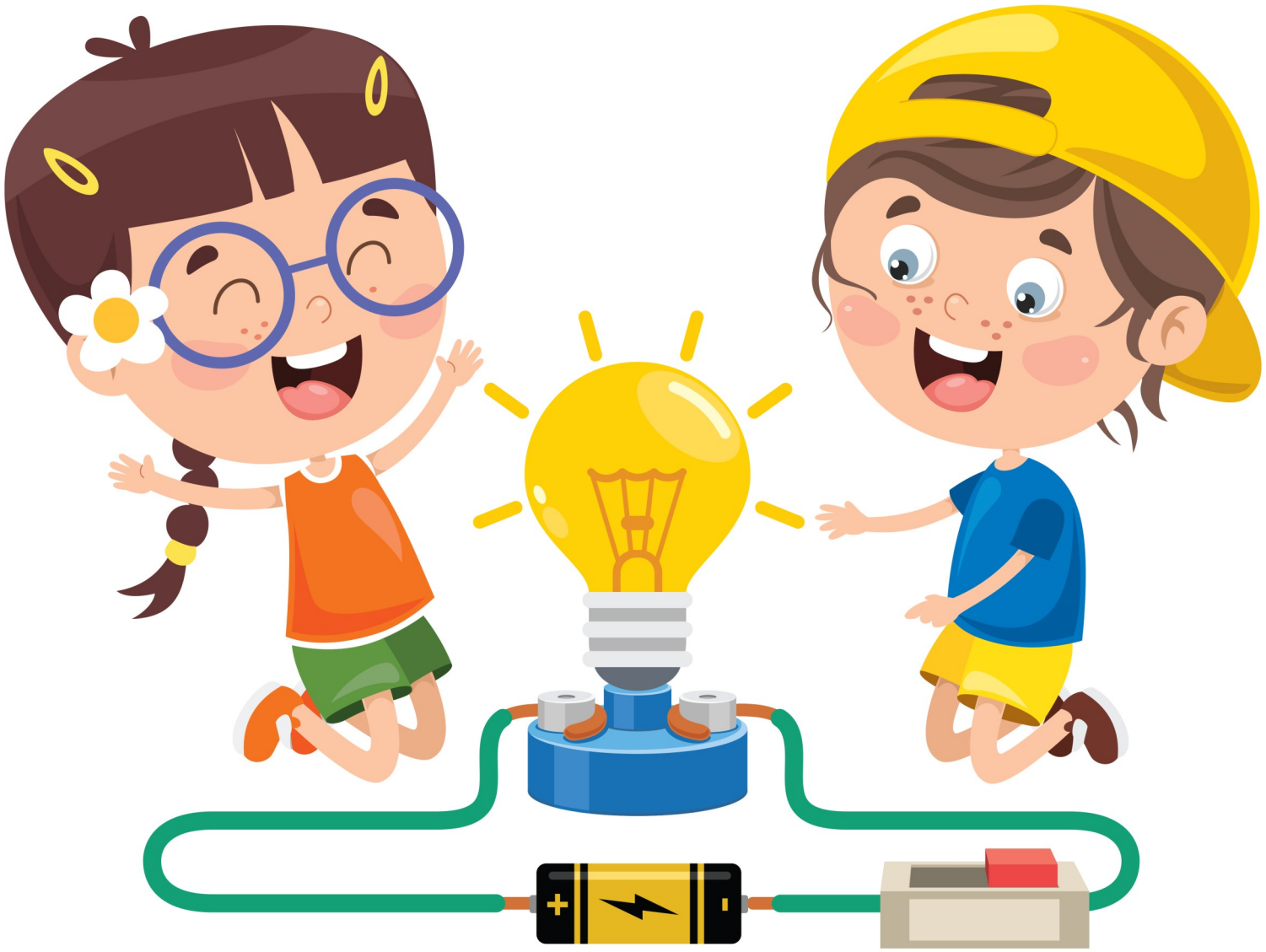


SNAP CIRCUIT LAPBOOK

Batteries

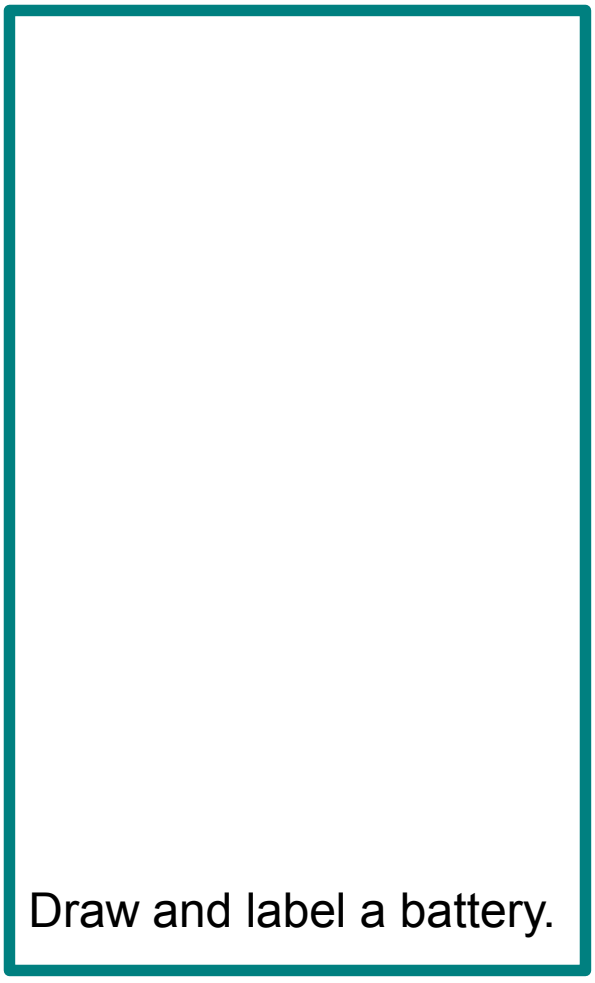
Battery power is measured in _____.

What do the “+” and “-” signs on a battery tell us?

_____

_____

Draw and label a battery.



What is the importance of a “ground”?

_____

_____

_____

Which part of the battery is the ground?

_____

What are batteries made from?

_____

_____

_____

Why do we have to replace batteries?

_____

_____

_____

_____

Challenge: Try to count the batteries in your home...think about all the hidden batteries in electrically powered products.

What is a circuit board?

What is a circuit?

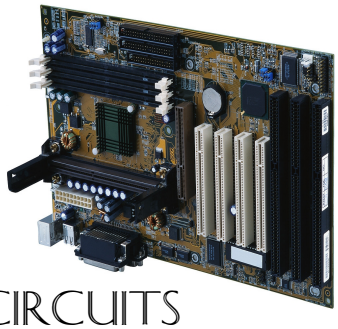
What is a series circuit?

What is a parallel circuit?

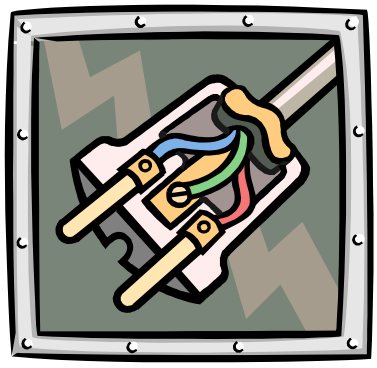
What is a short circuit?

Directions: Cut out each rectangle, including title, and layer together. Staple at the top.

Answer the questions, drawing diagrams if desired.



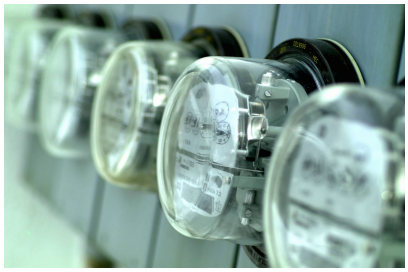
CIRCUITS



Why are electrical wires different colors?

T-Book: Cut out and fold flaps in and down. Cut out title square and glue on front. Answer the question inside the flaps.

Glue title after cutting and folding



Electric Current

Paste to lapbook

What is electric current and how is it measured?

ELECTRICAL SYMBOLS

Draw the electrical schematic symbols above part name.

Battery

Lamp

Slide Switch

Press Switch

Open Switch (on)

Closed Switch (off)

Motor

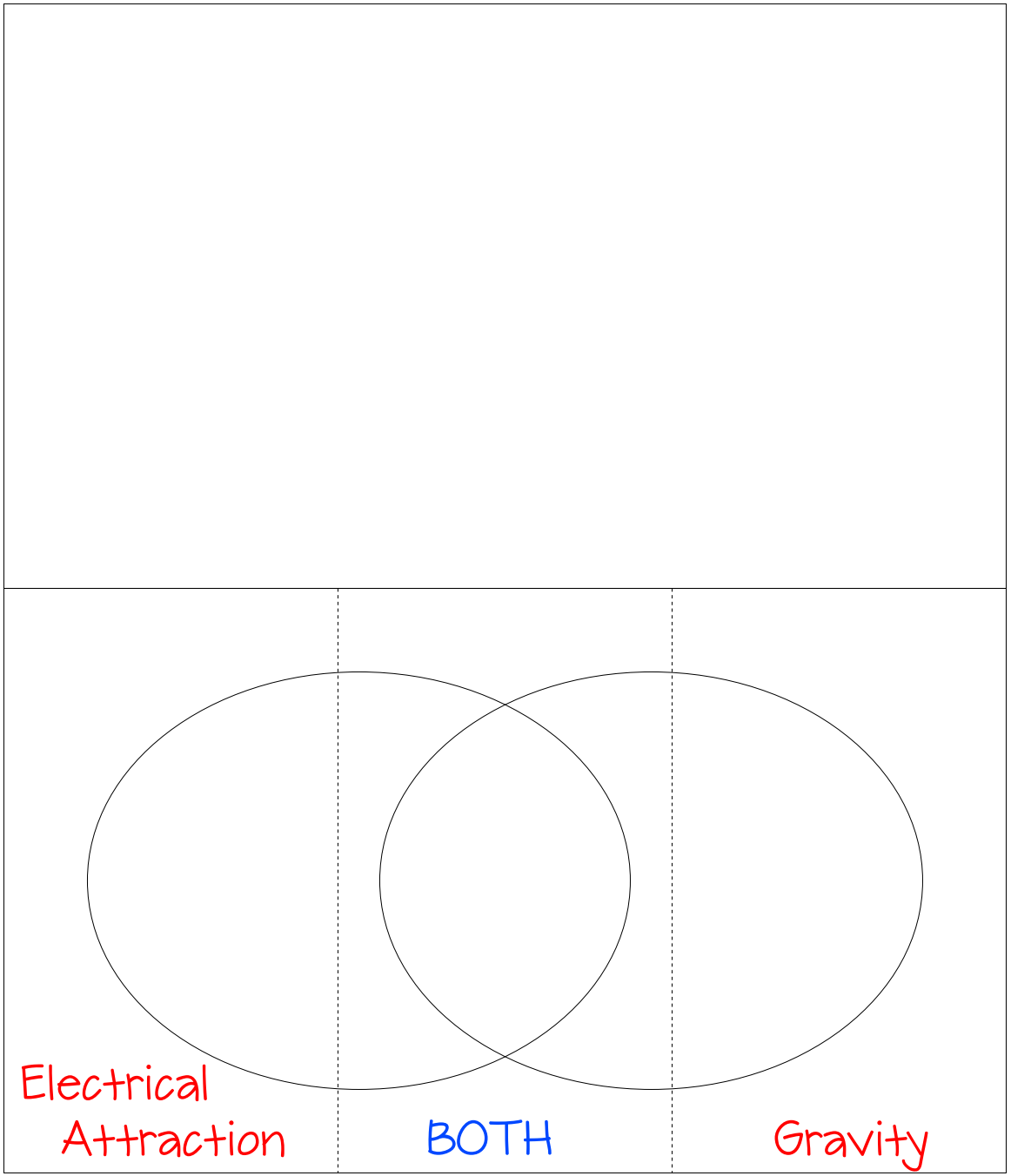
Resistor

LED

Photo Resistor

Speaker

Whistle Chip



Venn diagram:

electrical attraction

more powerful than electricity (1 to the 13th power)

balanced attraction so you don't notice it

can move around and change quickly

both:

a force of nature

gravity:

never goes away (constant)

not balanced attraction so you notice it (drop something)

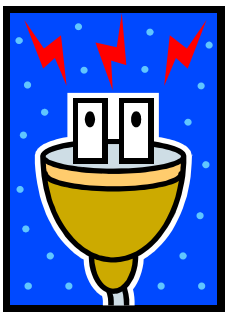
Electricity is...

Open flap for examples of electrical products.

Electronics is...

Open flap for examples of electronic products.

Electricity



Electronics

Directions: Cut out entire rectangle on outer edge. Trifold. Cut the lines for flaps to the fold. Finish writing the definitions for electricity and electronics. Open up the flap to write/draw examples of products that are either electric or electronic.

Make a schematic drawing for your bedroom, showing how the lamps and the switches controlling them are connected together.

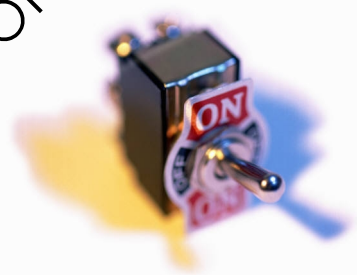
Do you recognize any of the above symbols?

What are schematics and why is it important to be able to understand them?

Glue title here

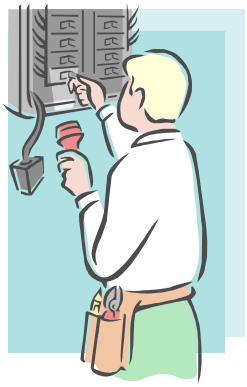
<u>Types of Switches triangular fold:</u>
Cut around entire outline and fold until it looks like a triangle.
Cut out title and glue on top.
On the inside flaps, include the following information:
1) what slide and press switches are,
2) draw symbols for both,
3) make a list of other types of switches found in your home.

Types of Switches



What is a fuse and why is it important?

Cut on dotted lines of the black/brown-out flap book.



What is a fuse box?

What is a...

Black-out?

What is a...

Brown-out?

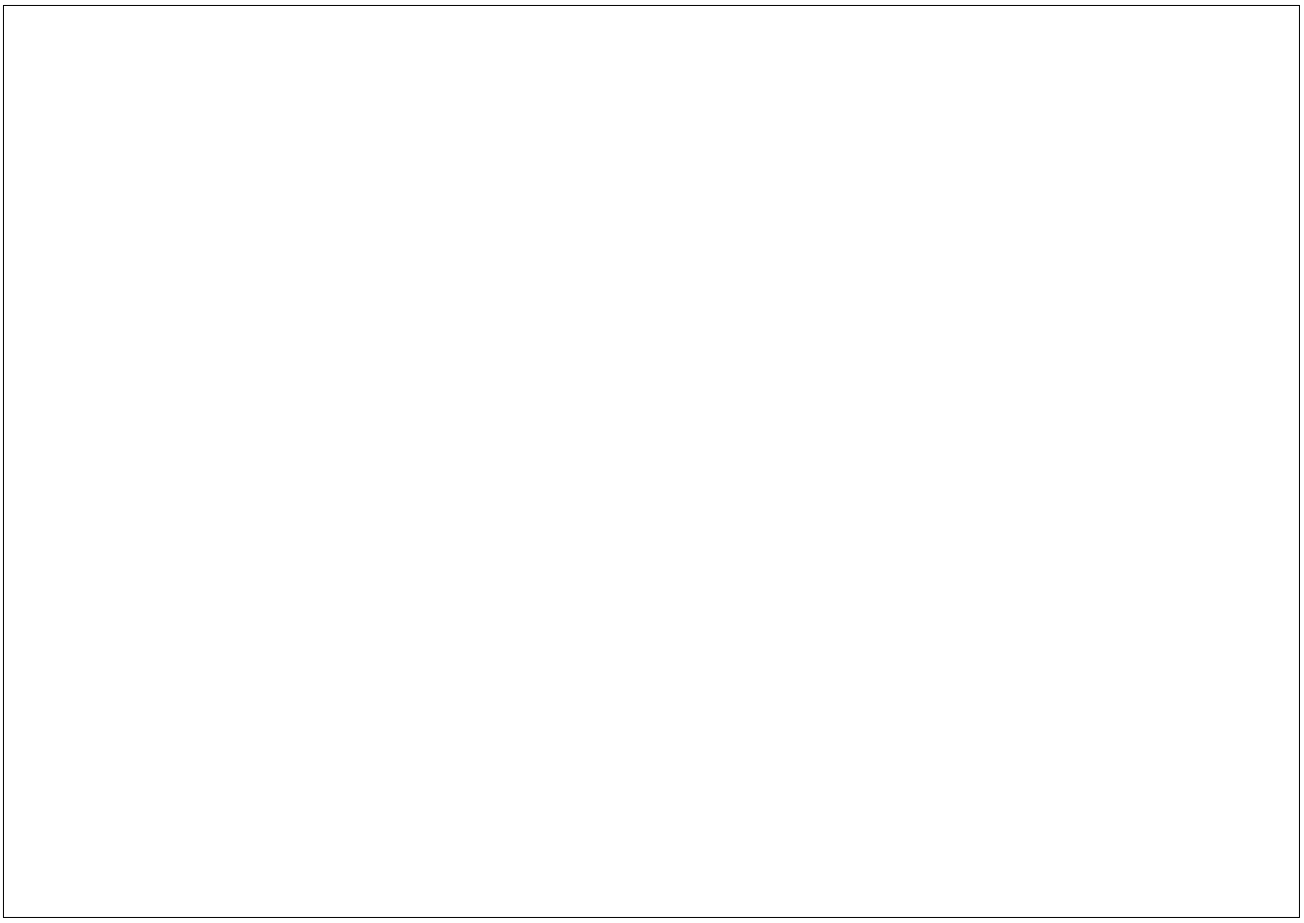
What is AC?

What is DC?

AC - DC?

L-book: Cut around entire book. Fold question down and title across. Answer the questions under the flap.

Motors & Generators



Draw and label a simple motor.

Paste flap book here...

More about Motors and Generators

Title book for the 3 books in a book. Cut around the edges and fold in half. Mount the three smaller books inside this title book. You may wish to print the notebook page on cardstock so that it will be more stable for mounting this book of books on to it.

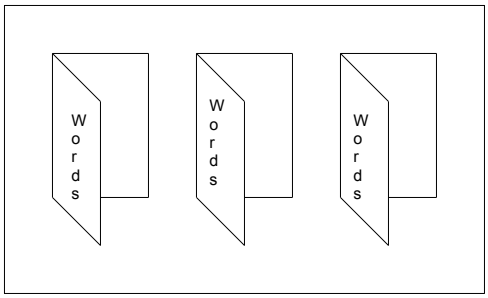
Paste inside bigger book

A motor changes electricity into mechanical motion. How does electricity turn the shaft in the motor?

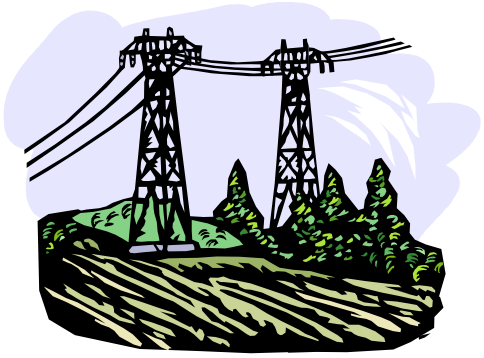
What is the purpose of a generator?

An electric motor is easier to control than gas or diesel engines. Why do you think that is?

Cut around each of the three mini books. Fold in the middle on the dotted lines. Write your answers inside the books. Paste the back of the mini question and answer books to the inside of the bigger title book. The cover flap of the big book should cover all three books. When you open it up, the inside should look like the diagram below.



What is the most important aspect of electricity in our society?



Polarity markings (the + and – symbols on a battery or motor) show the direction of the electrical current. Turn the battery around & you change the direction of the current. What happens when you change the direction of the current flow in a motor? Do lamps, switches and wire have polarity?

Polarity

STATIC ELECTRICITY!

IT'S SHOCKING!

What is static electricity?

What happens when a cloud builds up an electrical charge?

Why do you get "zapped?

Why do houses and other buildings have lightning rods?

How can YOU build up some static electricity?

CHALLENGE!

Can you explain what is happening and why it is happening to the child in the picture below?

What is a conductor?

(do you know what materials are conductors? open to find out!)

What is an insulator?

(do you know what materials are insulators? open to find out!)

Paste to lapbook

conductors or insulators?

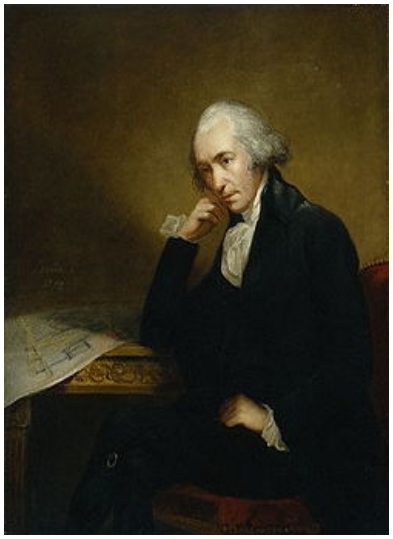
Directions: Cut entire square out, folding on solid lines and cutting on dashed lines. Cut out and paste title on to solid front piece. On the flaps, answer the questions in the space provided. Under the flaps, make lists of conductors and insulators.

Laws and Formulas

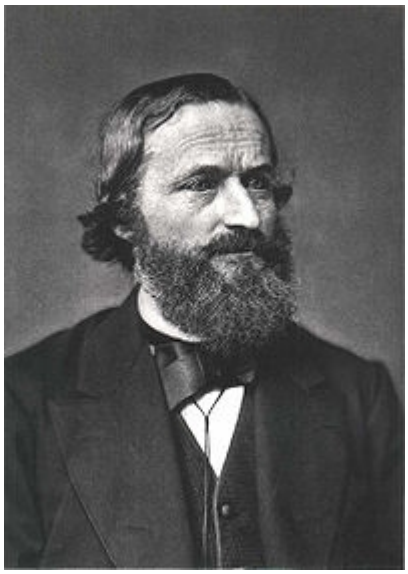
(And the Guys Behind Them...)

		 Ohm's Law
		 Watt's Law
		 Kirchhoffs Laws

George Ohm
1789-1854
Germany
Ohm's Law = 1828

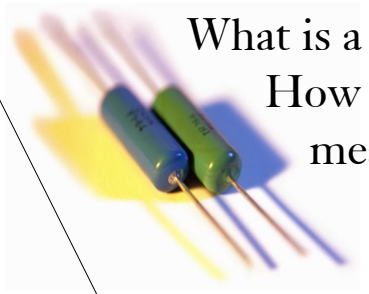


James Watt
1736-1819
Scotland
Worked with steam engines
watt named after him in 1889



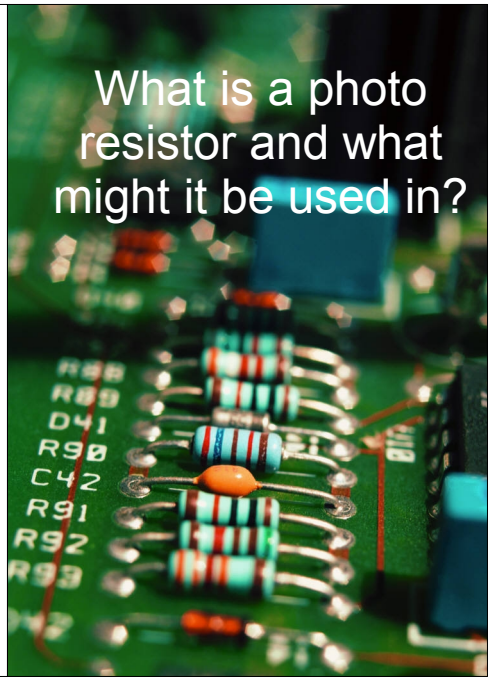
Gustav Kirchhoff
1824-1887
German
Kirchhoff's laws: 1847

Directions: Cut around the perimeter of the three tri-fold books. On the inside, paste the photo of the scientist. Also inside, include their birth/death dates and country of origin, and when their law was discovered. Look them up on Wikipedia if you want more information than what is provided here.
On one flap, all by itself, write the law/formula. Paste onto main formula page.
Decorate by writing the formulas (including the one for total resistance if desired) in various colors around the page.

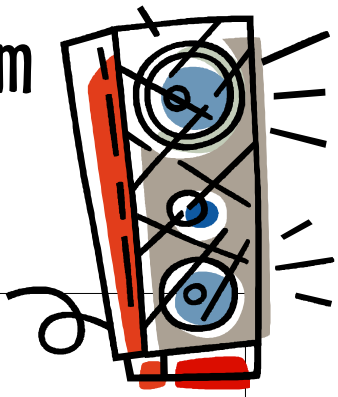


What is a resistor?

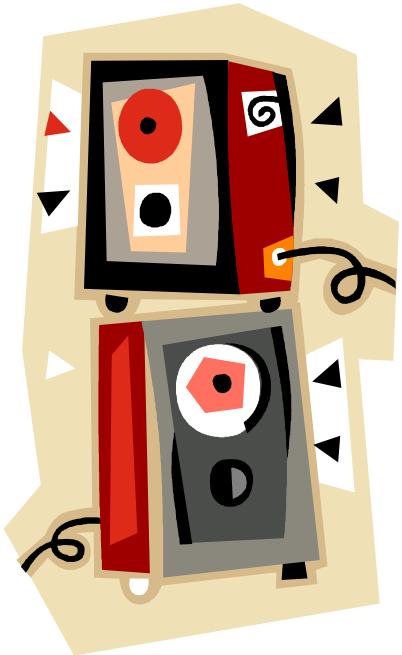
How is resistance measured?



Speakers: Just Another Form of Electricity



Draw and label the parts of a speaker.



Describe how a speaker converts electricity into sound.

_____

_____

_____

_____

_____

_____

_____

_____

_____