Electricity Lapbook

by [Homeschool Helper Online]

Library List:

Magnetism by Darlene R. Stille (ages 4-8)
Electricity Darlene R. Stille (ages 4-8)
Magnetism by Peter D. Riley (ages 9-12)
Electricity by Peter D. Riley (ages 9-12)
The Facts about Electricity by Rebecca Hunter
Electricity by Chris Woodford (gr. 4-7 has timeline information)
The Complete Book of Science grades 5-6

Activities:

Minibook Templates to coordinate with Electricity Lapbook

Vocabulary: charge, negative, positive, conduct, resistance, insulate, gauge, friction, voltage, magnetism, opposite, similar, load, alternate, direct, terminal, velocity,
Here is a worksheet for other vocabulary words.

Resources:

An easy to understand interactive lesson about circuits, insulators, and conductors.

This site explains what electricity is. It is better understood by kids in 5th and up depending on reading ability.

Here you'll find an easy to understand interactive demonstration on electricity.

What is electricity? (High school)

Introduction to Electricity (older kids)

How batteries work

Easy to understand explanation of static electricity

What is electricity?

Just a few fantastic electricity facts

Why can some birds sit on power lines and not get zapped?

A simple circuit picture you can use for your lapbook.

A picture of 2 magnets

A black and white image of an outlet

Activities:

1. Timeline
2. Vocabulary
3. What is electricity?
4. Negative and Positives
5. Static Electricity
6. Types of Circuits
7. Insulators, Conductors, Resistors
8. Magnets
9. Electric Meters
10. Batteries
11. AC/DC
12. Electric Safety
13. Taking Electric Experiments a bit further

Activity 1: Timeline

Use an accordion fold for the timeline. Have them record milestones and discoveries concerning electricity.

Activity 2: Vocabulary

For the vocabulary I thought we would make cards the size of business cards writing the word and definition on front and a picture representation of the word on the back. We'll then make a pocket fold to hold the cards in our lapbook.

Activity 3: What is Electricity?

First I will have them write a short report on what electricity is using this electricity report form.

I'll have them use this sheet to give them an idea of what to put in their report and to take notes on. What's electricity worksheet?

Electric force is an interactive activity to help students understand it.

The Voltaic pile (it is the 2nd experiment on the page)

Electricity word search

Do page 288 of *TCBOS*

Activity 4: Negatives and Positives

Like charges repel each other. So if we were to charge two things with negative charges they should repel each other. You'll need 3 strips of newspaper and a piece of plastic wrap. Holding 2 strips of newspaper up but not touching take the plastic wrap and rub it up and down the strips of newspaper. Now try and touch them together. They should repel each other. Now put one strip down and pick up the other. Rub only one strip with the plastic wrap and then put the strips close to each other. They should attract.

What we are seeing is that two like charges repel each other but opposite charges attract each other. You can not put 2 positives or 2 negatives together.

Here is another thing to demonstrate this. You'll need two balloons, about 2 to 3 feet of string, and tape. Blow up the balloons and tie the strings to the end. Now hang them beside each other in a door way. They should be close but not touching. Now rub them in your hair or use a piece of wool cloth. Let go and see what happens. They should push away from each other.

Making an electroscope

Have the kids use a simple rectangle folded in half to write what they learned about negative and positive charges. They'll write Negative and Positive charges on the front. I'll have the younger kids draw pictures of what we did and the older ones will write about the experiments.

Activity 5: Static Electricity

To help them get more of an idea of how static electricity works I will have them do a series of experiments. I'll have them use this book for recording information. On the front they'll write Static Electricity. The tabs will go like this - what is it, Runaway cola, dancing paper, light by friction, super sparker, the charger, the comb, flea circus. On the tab what is it they should write a brief description of what static electricity is. For the lab tabs they should write what they did, observed and why they think it happened. (I also thought they could draw some lightning bolts on the front cover)

Runaway cola can experiment

Dancing paper experiment

Light by friction

Super sparker experiment

The Charger (4th experiment on page)

Picking up things with a comb

Electrical flea circus

Activity 6: Types of Circuits

First they do these online activities to get an understanding of circuits before we start playing with them.

Do this online activity to learn about circuits.

An online gizmo for building virtual circuits

Open circuit online game (very simple)

Next we are going to use this octagon shape to make a 3 page book. The first page they'll write electric circuit and what an electric circuit is. The next page will be a series circuit and definition. I will also have them make a series circuit diagram. The third one will be for a parallel circuit done in the same fashion.

Now we'll have some fun trying to build these circuits. We'll record the experiments on a mini book.

Open and short circuit experiment

Simple circuit

Series Circuit

Switched circuit

Parallel circuit

A simple computer

What happens when you blow a fuse?

Activity 7: Insulators, Conductors, Resistors

We are going to use a tri-fold for this mini book. On the first section write Insulators and write the definition. The second will be Conductors and the third Resistors.

We are going to do an experiment to see what kinds of things are insulators and conductors. You'll need to gather a bag of things for them to try. There is a form on this page where they can record the information and glue onto their lapbook.

Conductors and insulators

Resistors

Do the understanding insulation experiment on page 299 of *TCBOS*.

Activity 8: Magnets

I'm going to use a fan book for this activity. Here is a fan book template so you can get an idea of what I'm talking about. I'm going to make the fans larger though.

The front will say magnets. The second will tell what a magnet is and the rest will record each of the following activities.

Investigating magnets

Magnetic fields

Magnetic insulators

Make a magnetic toy

Create a magnet using electricity

Magnetic suction

A magnet exerts a force on current carrying wire.

Magnetism writing paper

Maze

Activity 9: Electric Meters

Reading an electric meter

Activity 10: Batteries

Do the battery diagram on page 295 of *TCBOS*

I'm going to use this to make a shape book for this activity. It will be 5 pages.

Homemade battery experiment

Battery life experiment

Build a battery holder

Activity 11: AC/DC

I'm going to use this to make a shape book for this activity.

Ac/DC current what's the difference?

A simple explanation of AC/DC power

Make a galvanometer to check for AC or DC current.

Do page 296 of *TCBOS*.

Activity 12: Electricity safety
I'm not quite sure how I'm going to add this to the lapbook.

Dorothy S. suggests: How about a mini tv ad scripted on receipt tape and scrolled through a tv looking frame.

Is electricity safe?

Ground fault circuit interrupter

Louie the Lightning bug coloring book

This demonstration will demonstrate why children should never play with electricity. You will need a pickle an old extension cord and a pan. Place the pickle in the pan and then attach the pickle to the wires of the extension cord. Then plug it in. The pickle will burn, glow, and smell. This is very dangerous. Make sure they understand they are to never try these themselves. The pickle represents what could happen to a human

Activity 13: Taking electric experiments a bit further

This is the clip art image I'm going to use to make a shape book for this activity.

A stripped down motor

Building an electric car

Design an electric car. There are no instructions just a list of materials to give them. They come up with the design on their own using the knowledge they have gathered.

Build a planetary land rover.

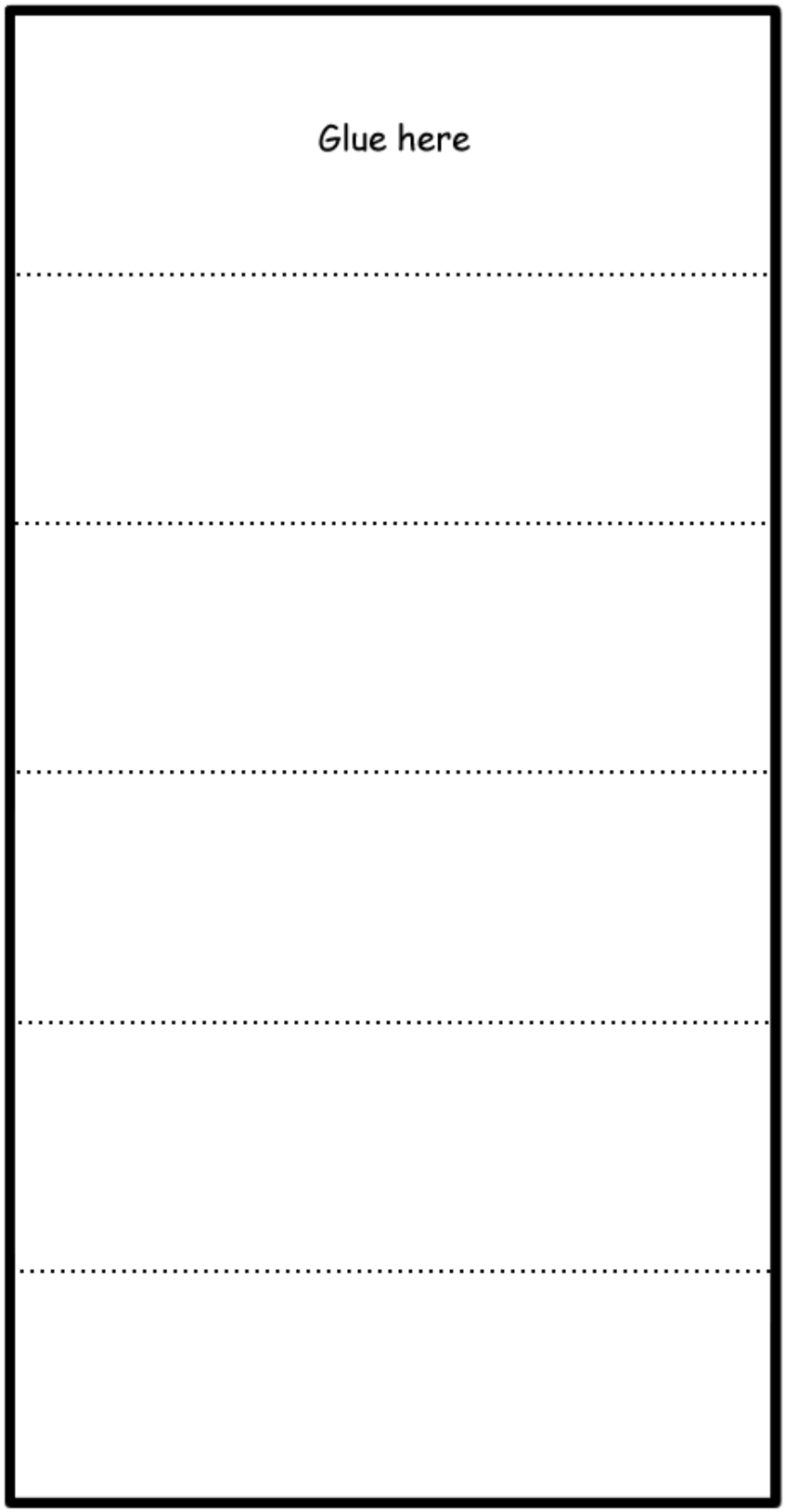
Glue here

Cut along the outer edges. Fold with a fan fold on the dotted lines.

An

ELECTRIC

Timeline



Cut along the outer edges. Fold with a fan fold on the dotted lines.

Electricity Timeline

For more info see http://www.choptankelectric.com/kids/timeline.html

1752
Benjamin Franklin conducts his famous kite experiment.

1820
Electricity and magnetism are proven to be related.

1821
Michael Faraday invented the first electric motor.

1876
Alexander Graham Bell invents the telephone.

1879
Thomas Edison invents the incandescent light bulb.

1903
Electric washing machine is invented.

1933
President Roosevelt and the New Deal create Tennessee Valley Authority.

1935
The first Major League Baseball game played under the lights.

1935
Rural Electrification Administration (REA) forms.

1935
First REA-financed electric co-op line goes up.

2003
Power grid failure darkens Northeast United States.

2005
Broadband over powerline may be the next frontier in electricity.


New
Words










Research and complete a short report on electricity using the minibook at this address:

http://www.abcteach.com/free/s/shortreport_electricity.pdf

The report should answer these questions:
1. What is electricity?
2. What are electrons, neutrons, and protons?
3. What charge do electrons, neutrons, and protons carry?
4. How do we measure electric force?

Positive/Negative Charges Experiments

Materials Needed:

3 strips of newspaper
Plastic wrap

Procedure:

Holding 2 strips of newspaper up but not touching take the plastic wrap and rub it up and down the strips of newspaper. Now try and touch them together.

What happened?

Now put one strip down and pick up the other. Rub only one strip with the plastic wrap and then put the strips close to each other.

What happened?

Materials Needed:

2 balloons,
2-3 ft. of string
Tape

Procedure:

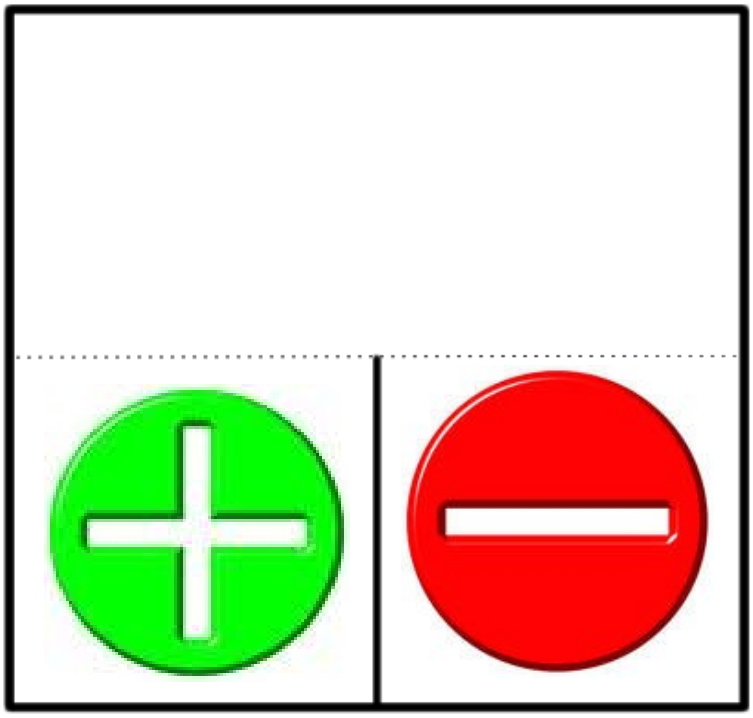
Blow up the balloons and tie the strings to the end. Now hang them beside each other in a door way.

What happened?

They should be close but not touching.
Now rub them in your hair or use a piece of wool cloth. Let go and see what happens.
They should push away from each other.

Why?:

Two like charges repel each other but opposite charges attract each other. You can not put 2 positives or 2 negatives together.

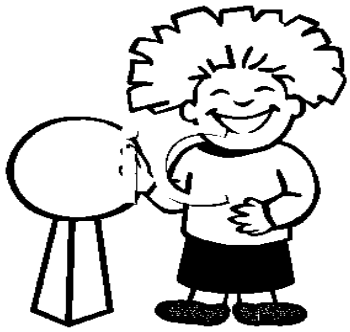


Cut along solid lines. Fold on dotted line.

Inside, write about the results of your experiment. What happened? Why did it happen?

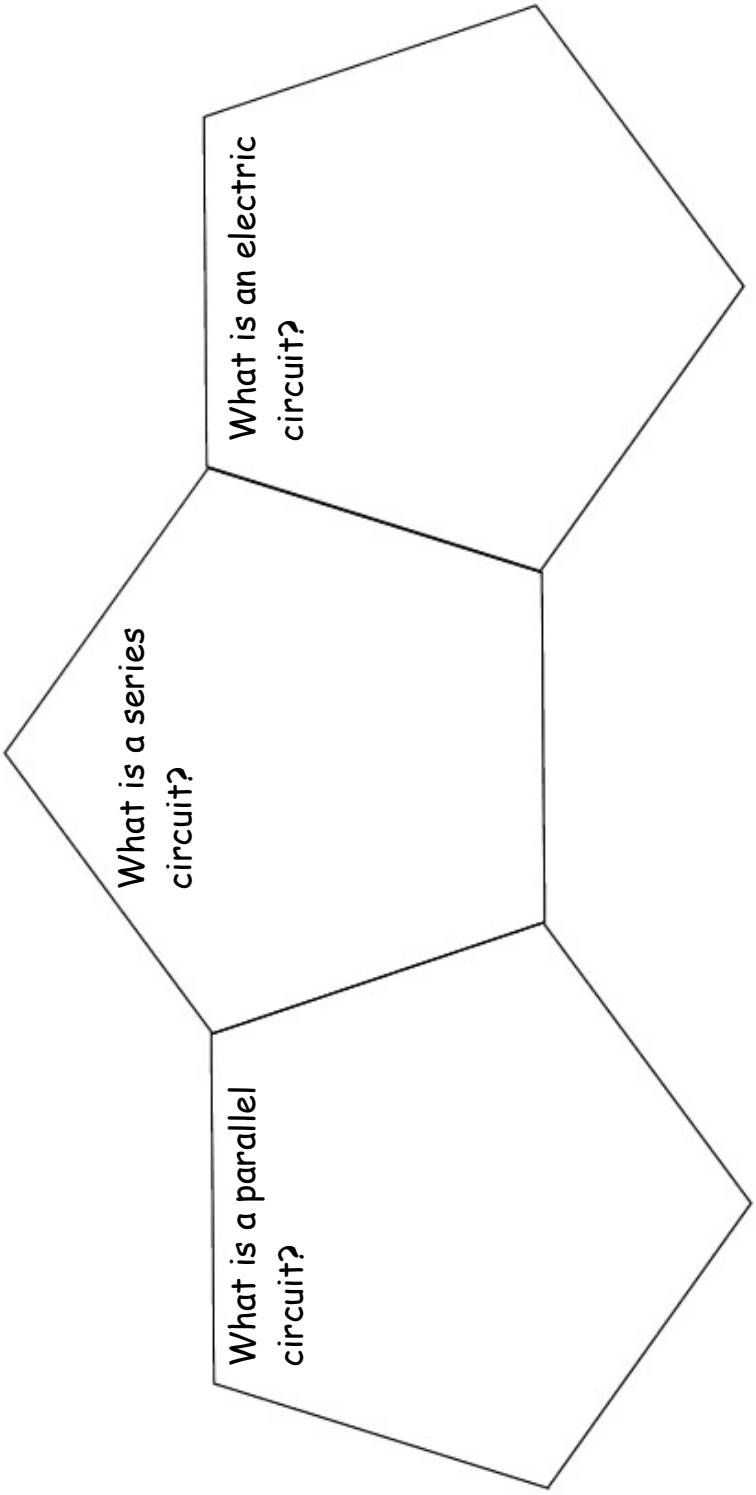
Cut out along outer lines. Fold on dotted lines.
Flap the smaller over the top like a matchbook.

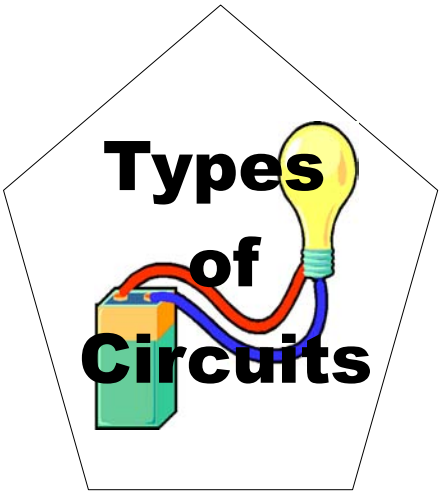
Static Electricity



Rub a balloon against your hair vigorously. Hold a piece of tissue paper close to the balloon. What happens? Record your results inside the matchbook.
Also, define static electricity on the cover of the matchbook.

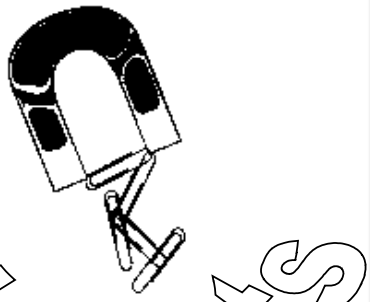
Cut along outer lines. Fold into thirds.





circuit
experiments

Glue here



Magnets

Cut out all shapes and punch holes in each. Stack them up and fasten them together with a brass fastener. They will now be like a fan.

What is a magnet?

Using 2 bar magnets and a compass, investigate your magnet. Write down 5 things you observed.

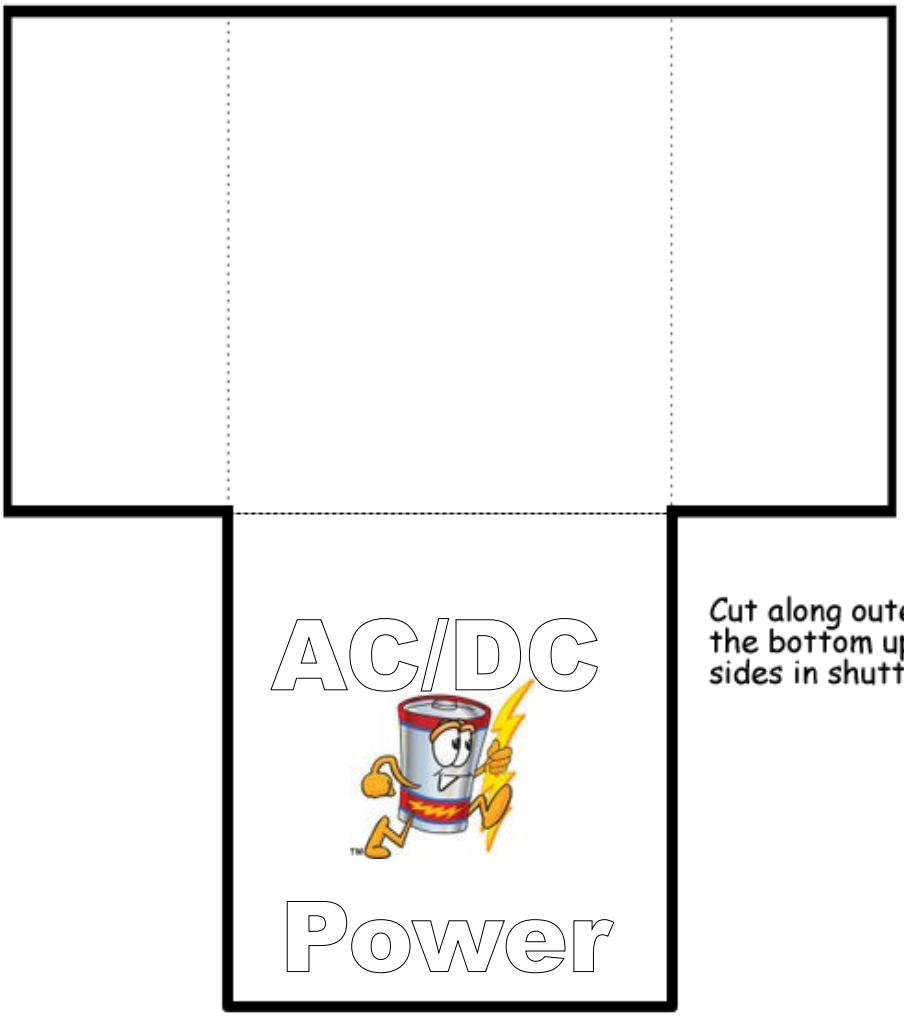
1.

2.

3.

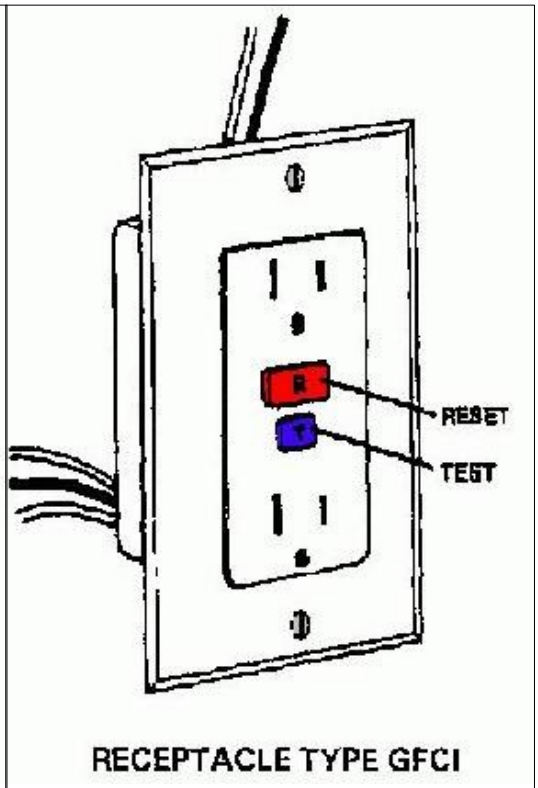
4.

5.



Cut along outer edges. Fold the bottom up, then fold the sides in shutter style.

Inside the minibook, explain the difference between AC and DC power.



RECEPTACLE TYPE GFCI

Inside the minibook, answer these questions:

1. What is a GFCI outlet?
2. Where are they usually located? Why?

WHY...

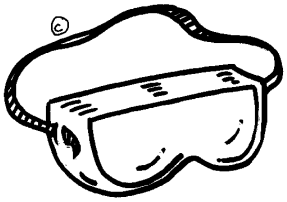
does electricity shock people?

Electricity flows through water almost as easily as it travels through the wire that brings electricity to your house.

Your body is 70% water. So if you touch electricity, it will flow through you, and you will be badly hurt.

The amperage of the electric current and length of time you're in contact with it, determines the injury.

SAFETY



Electrical Tips

From http://www.rp-l.com/electricsafety.htm

Be Safe Around Electricity!

the truth about electric shock!

This is so important! Electricity can shock, burn or kill you! You never know when contact with electricity will be fatal, but you can count on it hurting. It's not only power lines that can kill or injure you if you contact them, you can also be killed by shock from an appliance or power cord in your home if you don't know how to take precautions!

Avoid Electric Shock!

•Never climb utility poles or play on fences around substations.
•Keep electrical cords and wires away from heat and water.
•If you are touching water, never touch electrical devices such as light switches, hair dryers, curling irons, mixers, or toasters.
•Don't pull on electric cords to unplug them.
•Keep kites away from power lines, and never fly metallic balloons outside.
•Don't put your fingers in a light bulb socket.
•If you see a fallen electrical wire, stay away!
•Disconnect appliances before cleaning them.
•Tell someone if you see a frayed cord.
•Don't swim during an electrical storm.
•Don't touch overhead wires when you're carrying a ladder, pool skimmer, or any other long object.
•Don't climb a tree that has power lines running through or near it.
•Don't use an electrical appliance when you're wet.
•Tell your parents about damaged plugs and cords on outdoor and indoor appliances.
•Don't touch anyone or anything that is touching a downed wire.